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An Address

ON

TUBERCULOSIS OF THE LYMPHATIC SYSTEM.*

BY

PROFESSOR SIR ROBERT PHILIP, M.D., LL.D.,

PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH; CORRESPONDING MEMBER OF THE ACADÉMIE DE MÉDECINE, PARIS; PRESIDENT OF THE MEDICO-CHIRURGICAL SOCIETY.

No more fitting subject could have been selected with which to commence the activities of the Tuberculosis Society than that which has been proposed for discussion. The significance of the part played by the lymphatic system in the spread of tuberculosis throughout the body seems inadequately recognized in current medical practice and teaching. The subject calls for illumination.

Within the past hundred years medical vision has been progressively clarified regarding the main facts of tuberculosis in remarkable degree. Fundamental positions have been successively determined with precision. First came the clearing of the air, from the morphological point of view, through the convincing teaching of Laënnec as to the unity of tubercle in all its forms. Second, from the biological side, there followed the definite proof by Koch of the essential causal factor.

With these positions determined, advances have been made along numerous lines, both pathological and clinical. The morbid anatomy—macroscopic and microscopic—of tubercle, as it occurs in any organ, has been studied with great exactness. While lacunae exist here and there, our knowledge in this direction is almost complete. From the biological side the life-history of the tubercle bacillus has been followed by endless observers. Thereby much has been attained in explanation of its morbific action and in the suggestion and elaboration of methods of treatment and prevention. There has been a gradual evolution of thought regarding tuberculosis whereby the horizon has been widened and faulty perspective has been corrected.

Just Perspective.

The local manifestation of tuberculosis in any one organ, important as it is, is seen to be of relatively less significance compared with the larger fact—of which the local lesion is but part expression—that invasion of the system by tuberculosis has been effected.

Granted successful invasion and live bacilli within the body, the potential of manifestation is infinitely various, both focally and systematically. In no two cases is the pathological and clinical picture identical. In the same case kaleidoscopic effects occur from week to week, and month to month, and year to year. After many years of work in relation to tubercle, my experience is that hardly a day passes without some new point of interest or fresh illustration in one or other direction.

We are gradually getting to the vantage position in respect of tuberculosis which we have for long occupied regarding other chronic infective processes, such as syphilis and leprosy.

Continuous Observation.

This advance has been largely contributed to by prolonged continuous observation of individual cases—not for weeks or months only, but through many years—from the earliest manifestation, for example, in an isolated gland, to successive further developments throughout the subject's life. I have in this manner followed numerous patients from early childhood to manhood or from early adolescence throughout adult life. The line of study is tedious and difficult, but throws a flood of light—not otherwise available—on the natural history of tuberculosis as a whole and particularly on that aspect of the subject which we are now considering. I commend the method of observation to younger workers, who presumably have the potential of carrying it out for sufficient periods.

Facts observed clinically in this extensive fashion are illuminated by comparison with observations in inoculated animals, where the gradually advancing involvement may be more rapidly followed stage by stage from the initial changes at the point of inoculation through successive structures and viscera.

* Introductory to a Discussion on the subject at the Tuberculosis Society of Scotland, November, 1921.

Stages of Infection.

In offering a constructive representation of our present knowledge of the spread of tuberculosis in the human subject certain landmarks may be specially signalized.

Let us admit that the point of inoculation with the tubercle bacillus may be almost anywhere in skin or mucous surface. Opportunities for inoculation are numerous, obscure, recurrent, and notably conditioned by the subject's environment. Dates of exposure to tuberculous infection are less exactly determinable than in syphilis. Nor is the fact of successful invasion by the tubercle bacillus commonly registered in the human subject, as it is in the guinea-pig, by a local sore analogous to the primary sore in syphilis.

Primary Incubation and Initial Local Lesion.

None the less, from the occasional occurrence of demonstrable cases of local sore either of skin or mucous membrane with a definite history of precedent trauma—for example, in laboratory, *post-mortem* room, or slaughter-house—we are in a position to predicate a measurable period of primary incubation between the actual entrance of the bacillus and the occurrence of the initial local lesion. Whether or not the point of entrance is indicated by the occurrence of an evident local lesion, such point of entrance must be definitely predicated. Much confusion has been introduced into the consideration of the subject, as it seems to me, by the sharp, even acrimonious, difference of opinion which has emerged between supporters of the theory of introduction by inhalation, and of introduction by ingestion. Observers have come to be ranged as if in opposing camps, while the truth would seem to be that both are right.

The outcome of collective observation appears to be that inoculation of the human subject by the tubercle bacillus occurs by varying channels in different cases. While, if entrance occurs through the skin, the event is commonly registered by a definite sore, an obvious lesion is seldom traceable when inoculation has been effected by way of the mucous membrane, as may be the case at any point in the alimentary tract from the lips to the anal orifice, or in the respiratory tract from the nostril to the ultimate alveolus.

The absence of local lesion is likely when infection occurs, as it oftenest does, during the tender period of developing childhood. At that date the mucous surfaces are rapidly absorbent and succulent, and the entrance of the tubercle bacilli may leave little, if any, trace. Theoretically, especially at that age, the possibility of entrance at any point of the mucous surface must be admitted, but the greater vulnerability of certain points, notably the tonsillar region, including the posterior nares and fauces, will be kept in view.

Second Incubation Period: Involvement of Lymphatic Glands.

Following successful invasion, whether evidenced by local sore or not, ascertained facts allow us to predicate the occurrence of what may be termed the second incubation period, during which gradual spread by way of the lymph stream is taking place. In the experimental animal the completion of this secondary incubation is evidenced by enlargement of a lymph gland in the vicinity of the initial sore, followed by further extension to other glands.

Careful observation in the human subject, particularly in children, frequently reveals more or less clearly a similar succession of events. Thus, following inoculation of the tonsillar region, one or two external glands may be found evidently enlarged, and then others progressively until, it may be, a network of such enlarged glands in the submaxillary and supraclavicular regions is determinable.

Specially noteworthy in many cases is the fine multiple enlargement of lymph nodes extending in fanlike fashion from the angle of the jaw downwards. The enlarged glands may vary much in size. Such infiltrated and indurated glands may show little tendency to caseation or softening. Indeed, the enlargement is, for the most part, so slight as commonly to be passed over, unless the point is *deliberately investigated by specially detailed palpation over likely regions*. So far as these glands are concerned, this is all that may happen. To local incidents—or accidents—in the course of the tuberculous involvement I shall return shortly.

Further extension of infection throughout the system proceeds insidiously by way of the lymph stream—legitimate or irregular—until presently, as is readily followed in the experimental animal, groups of glands at a greater and greater distance become implicated, the individual glands undergoing changes similar to those just indicated.

Clinically the evidence of this progressive involvement varies according to the position of the glands and merits observation. In all cases the conditions of more accessible glands—for example, axillary, bronchial, abdominal—should be investigated. Such inquiry frequently yields most important evidence.

As we have seen, the commonly occurring change in the affected glands is infiltration and induration. For the most part there is little obvious disturbance of grosser sort. In this fashion infection spreads quietly from point to point. The glandular changes are so slight as readily to escape notice.

Incidents in Glandular Spread.

Gross enlargement with caseation, with all the possible inconveniences which may follow, is a relatively uncommon event. Such obvious involvement, causing deformity of outline and calling for operative interference on that account, or because of softening and risk of rupture, may be regarded as an uncommon incident compared with the frequency of slight, progressive implication of glands, one group after another, without more striking development.

The deforming swelling or threatened rupture naturally arrests attention. The question of immediate interference requires consideration. There is, however, a serious risk that treatment may be restricted to the obvious disturbance, to the exclusion of the more significant distribution of the disease. There is too little consideration of the steady passage of tuberculous infection in the quieter fashion that has been described. In presence of gross enlargement of glands a thorough-going search should be undertaken for less obvious infiltration which extends frequently over wide areas throughout the body.

Systematic Examination of Lymphatic Glands.

Whether or not immediate local interference is required—for example, with a view to immediate removal of gross deformity, such as a large mass in a pretty girl, or for the discharge of softened caseous material when rupture is threatened—the wider issues of the case must be carefully appraised and handled.

Were this line followed the guidance afforded by early illness would not be lost. It would cease to be common experience to have case after case come under observation for advanced disease with a history of two, four, six, even twelve, successive operations for enlarged glands, or to encounter as great a number of discharging sinuses without indication of effective attempt to deal with the larger question.

Sphere of Vaccine Therapy.

From long-continued observations in a great variety of cases I am satisfied that this is the moment to institute sufficiently prolonged vaccine therapy. The effect of tuberculin, maintained for long periods, is remarkable (1) on the glands which for the moment are more immediately in evidence, (2) on groups of glands less obviously affected, which may be discovered in other areas, and (3) on the intoxication, which is more or less determinable in most instances.

Under the continued use of tuberculin—whether subcutaneously or percutaneously (by inunction), as I have practised with excellent results for many years—the grosser tumours gradually melt away. The agglomerate mass separates into discrete glands, which in turn become smaller and smaller until all that remains, in most instances, is a firm, apparently fibrous core, possibly calcified in part. *Pari passu*, the glands at a distance are influenced, and the advance of *dis*intoxication is registered by the improved appearance of the patient, increase of weight, and recovery of muscular tone.

Further Spread of Infection.

If the lymphatic system has been widely invaded and the advance unchecked, the possibilities of extension to individual viscera and generally throughout the body become almost unlimited, in the absence of arrest of infection. The tubercle bacillus readily passes elsewhere by a variety of channels.

Let me accentuate the point that these channels may be what we may term legitimate, or they may be less regular. In presence of large masses of agglomerated glands—for example, about the neck—there is often conspicuous stasis, and even reversal, of lymph flow. The resultant is the production of the full, heavy, porcine or scrofulous aspect, to which older observers paid much attention. From many observations following the special lines of treatment indicated, it seems to me that the classic scrofulous appearance is to be explained largely in the way suggested. Under treatment, the gross enlargement becomes sensibly reduced and the agglomerate mass resolves into discrete glands, lymph stasis is gradually relieved, and the natural outlines of face and neck are restored.

Among most civilized peoples the stage of glandular involvement—whether as the more commonly occurring fine, multiple implication, or the grosser enlargement associated with deformity and softening—is chiefly determinable in children, occurring more rarely at later ages. Among uncivilized peoples, on the other hand, this stage or type of disease—which is fitly described as the "infantile type"—may be strikingly found in adults who, passing from primitive, more or less savage, life, come abruptly into close contact with massed infection in older countries. It was typically seen among native troops during the recent war—for example, the Senegalese troops in France. In his native country the Senegalese hardly suffers from tuberculosis. Its occurrence is limited to dwellers in more urban districts in contact with European settlers. The Senegalese troops recruited from such primitive regions were found on arrival in France—after minute examination—to be for the most part free from tuberculosis. Yet, notwithstanding the enforcement of good sanitary conditions, as typically in the Fréjus camp, where Professor Borrel made his observations, tuberculosis developed rapidly, with gross enlargement of lymphatic glands and grave toxaemic symptoms—commonly terminating fatally.

Passage from Lymphatic System.

The extension of infection from the glandular system to the viscera and blood stream does not call for detailed discussion on the present occasion. Suffice it to recall that extension may proceed along a variety of courses—for example, by way of the thoracic duct, or, more abruptly, by direct extension from an involved gland to other structure; by propinquity, as from glands to pleura or lung; or by more abrupt rupture of such gland into, it may be, a bronchus, with rapid widespread involvement of lung, or into a blood vessel, with the grave possibilities of generalized dissemination. On the details of such carriage I do not enter, as taking us beyond the limits of the present discussion. Much may be learned as to the possibilities of this extension from a study of the facts of comparative pathology.

Observations in the experimental animal and also in the slaughter-house point to the probability of the direct passage of the tubercle bacillus from one group of glands, in which individual glands have been successively invaded, to groups of glands in other regions, apparently by direct lymphatic connexion, and no less to the possibility of the passage of the bacillus from an adherent gland to a contiguous viscus. The deductions from such observations are endorsed by observations which have been recorded by various observers from autopsies in the human subject. The occurrence of direct spread from cervical glands downwards to thoracic and abdominal glands, and, conversely, a spread from abdominal glands upwards, may be accepted. The fact may be readily illustrated by comparing the results of inoculation—for example, of the guinea-pig—in one case in the groin, and in another case in the cervical region. While the ultimate result is a general involvement of the lymphatic glands, the sequence of events depends on the point of primary entrance.

SUMMARY.

In closing, let me rapidly recapitulate some of the chief points covered by this address towards which discussion may suitably be directed:

1. The part played by the lymphatic system in the early spread of tuberculosis requires to be emphasized.
2. Patients should be examined with that in mind, and the more important groups of glands should be systematically reviewed. In cases of general delicacy, all the readily accessible lymphatic glands should be carefully investigated.
3. In young children, the lymphatic system should be investigated with especial care, from time to time.
4. Lymphatic tuberculosis, conspicuous in children, becomes less marked in later life.
5. In cases of gross enlargement of one or more glands, exacting search should be made into the state of adjacent glands and other groups of glands.
6. Operative treatment should be limited to emergencies—for example, the immediate removal of an ugly deformity in

certain cases or the evacuation of an obviously softened gland.

7. Save in exceptional cases, such operative treatment should not involve extensive incision.

8. Operative treatment should not be regarded as radical.

9. Tuberculous involvement of the lymphatic system can be effectively combated by continuous vaccine therapy.

SOME LOCAL RESULTS OF DENTAL INFECTION.*

BY

W. G. SPENCER, M.S.,

SURGEON TO THE WESTMINSTER HOSPITAL.

I PROPOSE in this lecture to refer to various cases which have come under my notice during the year just past, in which local complications had been set up by infection arising in connexion with the teeth.

It will become evident to you that I have been greatly indebted to the teaching of the late Sir Henry Butlin, particularly concerning the way in which cancer of the tongue may be prevented, and also to that of Dr. William Hunter, consulting physician to Charing Cross Hospital, as to the manifold harm resulting from oral sepsis. The importance of Dr. Hunter's observations is shown by the number of communications which have appeared of late on the chronic general infections set up by oral sepsis—osteo-arthritis, gastric and intestinal complications, septic anaemia, etc. Such chronic general infections are much more frequent and of greater importance than the local complications which I am about to mention, but these latter are at least troublesome, and may be dangerous, whilst I hope to show how they may be prevented.

Irritation by Tooth Plates.—Patients complain of stinging pain and tenderness along the sides of the tongue; there may be no apparent alteration of the surface epithelium, or merely this, that some papillae have become unduly prominent, in particular the line of papillae running forwards from the junction of the anterior pillar of the fauces, in the rabbit called the foliate papillae, may be a little swollen. Close inspection may discover dental defects, and lead to explanation that there has been delay in carrying out what a dental surgeon had advised. But in many it is impossible to find anything wrong with the remaining teeth. I have had continual opportunities of confirming the note by Butlin on p. 126 of the second edition of *Diseases of the Tongue*, 1900, which refers to tooth plates made of irritating materials. The note commences:

"For some reason which I am not able to explain red vulcanite appears to me to act as a very decided irritant and exciter of chronic superficial glossitis."

In the middle of the note occurs this sentence:

"But the dental surgeons are by no means generally of my opinion."

No year has passed since that date but that patients have consulted me, and the persistent irritation has disappeared when the vulcanized rubber composition of the tooth plate has been replaced by metal. The black composition seems less often than the brown a cause of irritation. I do not know whether the irritant is a purely chemical one, such as a larger amount of sulphur used in vulcanizing, or whether a growth of micro-organisms occurs on the roughened surfaces, which cannot happen on smooth metal.

Herpetic eruptions are very painful when the corneous layer becomes detached and the persistent recurrence is very troublesome. It is quite useless to treat the middle-aged women, who are commonly the sufferers, for dyspepsia, neuralgia, and anaemia, unless all causes of dental irritation are removed first of all. Generally the outstanding dental treatment over which difficulty arises is that for the relief of pyorrhoea alveolaris affecting the lower incisor teeth; anything short of extraction may be unsatisfactory.

Precancerous Lesions.

Causes of patches of leucoplakia, papillomas, fissures, and chronic ulcers on the tongue and inside of the cheeks have of late years diminished. The clay pipe has become almost obsolete; tobacco, whether smoked in pipes, cigarettes or cigars, seems to give rise to much less irritation than was the case formerly, and most people, when any irritation is experienced, are wise enough to stop smoking, or to change the kind of tobacco. Only in the East, where tobacco is mixed with caustic lime and betel nut, and held in the mouth as a quid, is there any regular sequence of cancer. Of course this refers to tobacco when there is no other lesion present, for, although it is a matter on which it is difficult to speak with precision, smoking indefinitely increases the general effects of oral sepsis arising from the teeth.

Syphilis as an antecedent to cancer of the tongue has been influenced of late by the arsenical treatment; early superficial glossitis is quickly removed, and is thus prevented from going on to a definite leucoplakia, which neither mercury nor arsenic can remove. Against the improvement by the more rapid removal of early secondary manifestations is the uncertainty how far an advance has been made in the actual curing of syphilis. The effect of salvarsan and its substitutes in causing the rapid disappearance of the primary and secondary manifestations of syphilis may prove misleading, and prevent the carrying out of a prolonged course of treatment by mercury.

The practice of applying caustic to sores on the tongue continues; I am quite sure that caustic determines the commencement of those changes by which a chronic inflammation passes over into cancer.

There is one way in which cancer of the tongue can be prevented—namely, by the patient, or the first doctor he consults, or both, taking into account any lesion on the tongue, and in the mouth, as seriously as if it were an acute disease, to be kept continuously under observation until it has entirely disappeared, or has been cut out. I have never seen a case of cancer of the tongue or mouth, in a patient over 30 years of age, in which there has not been a definite history of a preceding inflammatory stage, during which interval the lesion might have been made to disappear, or it might have been removed by a slight operation.

In some cases, no doubt, the failure as to this lies with the patient, but it is a regular feature of the history of cases of cancer of the tongue that the impression made on the patient by the first doctor consulted has been that the condition was both trivial and transient. The doctor, however, failed to make the patient understand that for the trouble to be trivial and transient the patch should entirely disappear in a few days. The doctor did not tell the patient that every inflammatory condition affecting the mouth and tongue should under treatment completely disappear within three weeks, and that, if it should not do so, it should be removed by a superficial excision, and the wound so made closed by suture.

Complete disappearance implies that not only is any breach of surface covered by healthy epithelium, along with cessation of all pain and tenderness, but there should persist no subepithelial induration. If such epithelial induration is examined under the microscope it will be seen that a chronic inflammation is continuing which affects the epithelium from below. Hence an epithelioma can be started from below whilst the epithelial surface is apparently intact, just as well as when the epithelial surface is continually irritated by a jagged tooth.

The excision of patches of leucoplakia, fissures, subepithelial induration, nodules, warts, scars, and chronic ulcerations, however caused, followed by suture, is a completely successful procedure. The operation is attended by no danger, and as the removal involves only the epithelium, there is no impairment of the movements of the tongue.

Where there is subepithelial induration it is difficult to distinguish chronic inflammation from early malignant disease. Therefore when a patch has been removed and submitted to a microscopical examination, if in addition to epithelial overgrowth and subepithelial infiltration by small round cells, there has already set in a downgrowth of epithelial columns, the lymphatic glands, together with the external part of the submaxillary salivary gland, should be at once dissected out from the corresponding anterior carotid triangle. In such cases the lymphatic glands will generally show an increase of small round cells in the lymph spaces of the gland and its capsule, but definite epitheliomatous cells may not be recognizable. Exceptionally, when the patch removed has been situated across the middle line, the dissection has to be done in both anterior carotid triangles. Such operations are safe as regards life; there is little trouble after the operation, and that for a few days only, after which the patient is freed from anxiety, immediate and prospective. The scar of the incision in the neck becomes less obvious than one after removal of tuberculous glands.

* The Second Hunterian Society Lecture, delivered on January 11th, 1922.

When leucoplakia has been insufficiently treated and has spread widely over the surface of the tongue, an exceptionally extensive removal of epithelium may entail some impairment of the movement of the tongue, which, however, in course of time tends to disappear. There are also a few cases in which leucoplakia reappears on previously sound areas of mucous membrane, but if the patient submits to a repetition of excision of affected epithelium he escapes cancer.

Salivary Gland Infection.

Oral sepsis may penetrate the sphincters which close the orifices of the ducts of the parotid and submaxillary salivary glands, and set up a chronic inflammation in the walls of the ducts and in the substance of the gland. Acute septic infection, which in former days was common in the parotid, and generally fatal, has now become rare because among the duties of the nurses attending exhausted medical and surgical patients is that of keeping the mouth and teeth as clean as possible. The cases of chronic septic infection from the mouth commence by an induration of the papilla marking the orifice of the parotid or submaxillary duct; the duct itself becomes a thickened and painful cord, and it dilates during secretion, with an increase of pain. In the submaxillary duct a concretion may form, either a stationary large one, of the shape of a date stone, or one or more small ones which move in the duct backwards and forwards. Wherever situated, the calculus is the seat of great tenderness. If the infection spreads to the gland there is pain and tenderness, increased during salivary secretion. The following cases have been observed recently:

CASE I.

The patient complained of intermittent pain and swelling in the right parotid gland and along the line of the duct. The orifice of the duct formed a tender indurated nodule; a cord was felt along the line of the duct, at one point about the socia parotidis there was a cystic swelling. A canaliculus probe-pointed director was with difficulty passed up the line of the duct, and the duct slit up into the mouth as far as the anterior border of the masseter.

CASE II.

A patient had a parotid fistula over the position of the socia parotidis, the indurated papilla in the mouth had become impermeable to a probe passed from that direction. Therefore the probe-pointed director was passed from the fistula on the cheek down the duct into the mouth, and guided by it a second probe-pointed director could then be passed up the duct to a point beyond the fistulous opening. Thus guided the parotid duct was slit up into the mouth to a point nearer the gland than the fistulous orifice. The margins of the fistula having been then pared, and closed by clips, healing of the cheek occurred by first intention.

CASE III.

There was intense pain and tenderness at times along the line of the right submaxillary duct, which prevented the use of a lower tooth plate. The special point of tenderness shifted, at one time being just in front of the anterior pillar of the fauces, at another time right over the canine tooth. This sign was recognized as caused by a minute concretion moving its position in the duct; it could not escape because the papilla had become indurated and the orifice stenosed. The probe-pointed canaliculus director was passed with difficulty into and along the duct, which was then slit up as far as the intrabuccal portion of the submaxillary salivary gland. When seen a month later the saliva was being discharged directly from the gland into the mouth; the tenderness of the external portion of the submaxillary gland had been relieved; there was still some swelling and tenderness in the sublingual gland situated underneath the slit-up duct.

CASE IV.

When the septic inflammation has extended to the extrabuccal portion of the submaxil ary salivary gland, and this has not been relieved by slitting up the duct and subsequent massage to the gland, it has been necessary to remove the submaxillary salivary gland through an external incision. Glands so removed show chronic interalveolar fibrosis with dilatation of alveoli and of smaller ducts, many of which contain inspissated mucus in which calcareous material is deposited. A severe case of oral sepsis was started years ago, especially by pyorrhoea alveolaris affecting the lower incisor teeth. Both submaxillary salivary glands and the ducts were infected and also there was excited gastro-duodenal ulceration. The patient has had to undergo a series of operations on different occasions, the excision through the mouth of one, and then of the other thickened and dilated Wharton's duct, as far back as the gland; later the excision of the submaxillary gland on each side through an external incision; finally, gastro-jejunostomy to remove the gastric trouble. In addition all the teeth were removed and dentures fitted with considerable difficulty.

Acute Suppuration following Extraction of Teeth.

It may be described as the common procedure to extract one or more carious teeth, although there are present additional causes of oral sepsis. Any septic complication is so rare as to be negligible.

In the four cases I mention the extraction of two or three molars with all ordinary care was followed by acute suppuration. I believe that an acute septic infection of the raw surfaces of the gum and of the bare alveoli which followed the extraction in these cases was derived from the lower incisor teeth already affected by some degree of pyorrhoea. The character of the suppuration corresponded with that set up by virulent streptococci, mixed with staphylococci.

CASE I.

A female had become anaemic, for which there was no other evident cause than the state of her teeth. Three left lower molars were extracted, leaving eight teeth affected by pyorrhoea and some by caries. An acute septicaemia supervened at once, the temperature rising to 105° F. and the pulse to 130. There appeared an acute brawny oedema extending from the jaw to the clavicle on the side of the extraction. Under the presumption that the most dangerous part of the infection was due to streptococci, a 20 c.cm. dose of an antistreptococcic serum was administered every six hours for four doses. Meanwhile the exceedingly foul condition of the mouth was reduced by repeated cleaning and irrigation. The spread of the inflammation was arrested and suppuration supervened, fortunately superficial to the deep fascia. Under a general anaesthetic all the remaining teeth were removed by first wiping out the gum pockets around the teeth with iodine, and after extraction applying iodine to the alveolus. Then a long incision over the anterior carotid triangle laid open the suppuration. Healing followed without any reaction subsequent to the operation.

CASE II.

A female, after extraction, had acute inflammation below the jaw, which became circumscribed to the submental gland and to the gland over the bifurcation of the carotid on the corresponding side. All the rest of the teeth were sound except the lower incisors, which presented pyorrhoea alveolaris. The removal of these incisors and the opening of the abscesses had the same result as in the previous case.

CASE III.

A male, aged 50, had had oral sepsis for a long while. He was markedly thin and anaemic, for which there was no other evident cause. A couple of lower molars were extracted, following upon which he was attacked by septicaemia, attended by pain, sleeplessness, loss of appetite, and weakness. Suppuration started in the alveoli from which the teeth had been removed; internally pus spread forwards under the gum, externally there was inflammatory induration limited to the line of the horizontal ramus of the mandible. There was marked pyorrhoea alveolaris affecting the lower incisor teeth. Incisions were made through the gum from within the mouth, and suppurating cavities repeatedly syringed out. Later the incisor teeth were removed; the necrosis remained limited to the alveoli, and there was no extension to the neck. Convalescence was slow.

CASE IV.

This case ended fatally. A male, aged 40, had had some oral sepsis for probably ten years, and two or three carious teeth had been previously extracted without complications following. Then three molar teeth were removed from the lower jaw on the left side, and the patient went straight back to his office to work. Acute septicaemia followed, and three days after the extraction he was sitting up in bed with laryngeal stridor, the voice almost lost, swallowing with difficulty, temperature 105°, pulse 116, respiration normal in rate. The mouth was excessively foul; there was brawny oedema from the lower jaw to the clavicle on the left side. Injections of antistreptococcic serum were followed by relief to the laryngeal stridor, but signs of purulent bronchitis continued. Four days after extraction the foulness of the mouth had not been reduced in spite of the cleaning by the nurses. The brawny oedema of the neck had gone on to suppuration under the deep fascia. There was a limited necrosis of the jaw around the site of the extraction.

Under a general anaesthetic the remaining teeth, ten in number, were extracted whilst applying iodine as described above. Every tooth stank, more especially the lower incisors. Four incisions were made in the neck and tubes inserted; foul pus escaped. The result was an immediate improvement in the condition of the mouth; the necrosis of the jaw did not extend; foul pus and sloughs of fascia were discharged from the incision in the neck, but the purulent bronchitis increased. Ten days after the original extraction, and four days after the removal of the rest of the teeth, a little bright blood appeared with the pus and sloughs, so the drainage tubes were removed. Signs of a left-sided pleurisy being confirmed in consultation with a physician, on the eleventh day 15 oz. of turbid fluid were aspirated from the left pleura and found to be swarming with streptococci. Later, on the same day, the left pleura having again filled and the breathing and pulse becoming impaired, he was being carried into the operating theatre when suddenly the mouth was filled with blood and blood escaped from the neck. This was checked by thrusting a finger into a submaxillary incision and another through the mouth into the necrosing area around the jaw. An enlargement of the incision in the neck exposed facial blood vessels in the midst of foul granulations. The haemorrhage was apparently derived from both an artery and vein and was controlled by clamps. After this the fluid was let out from the pleura. The patient died ten minutes after his return to bed.

There are two ways of regarding these four cases. They may be considered exceptional occurrences, and many objec-

tions may be raised to the removal of the lower incisor teeth. On the other hand, when affected by only a slight degree of pyorrhoea, the lower incisors may become the source of a virulent infective agent, independent of the quantity of pus discharged, in particular as the focus from which a streptococcal infection may arise. Granted this, it may be best to extract these teeth first, and after the oral sepsis has been reduced remove the more deeply rooted teeth.

I have many times removed a number of teeth at one operation without noting shock or inflammatory reaction, but rather an immediate relief of the oral sepsis. The cases have, however, been treated like others undergoing major operations, including preliminary preparations, a general anaesthetic, disinfection, and extraction of a tooth at a time, and after-treatment in bed.

FEBRICULA AND INFLUENZA.

BY

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In every great boarding-school there occur from time to time—and usually no term is quite exempt—a certain number of cases of a complaint popularly spoken of as "a chill" or "the flu," or, if much more severe, "influenza," and characterized in its simplest form by sudden onset, usually a shivering attack, and pains in the head, back, and limbs. Sometimes there is slight sore throat and a mild adenitis, with nothing but a little redness of the fauces to be seen, and the patients have perhaps only recently got rid of a slight cold and cough; but there is rarely much catarrh when they seek advice, nor, apart from the pyrexia and slight rise of pulse rate, is there any physical sign to account for the condition. After a few days in bed, the administration of a purge, gargle, and ammoniated quinine or some simple diaphoretic, the temperature drops either suddenly or by a descending zigzag to normal, and the attack is over. Such is the disease in its simplest form.

My object is to describe this disease and its varieties, and to establish its relation to certain allied conditions—namely, coryza, febrile catarrh, and influenza—and to consider the etiology, pathology, complications, and some points in the treatment of patients in whom they occur.

Sir William Osler, in his *Principles and Practice of Medicine*, describes febricula as "fever of slight duration, probably depending upon a variety of causes." A febrile paroxysm lasting twenty-four hours and disappearing completely is spoken of as "ephemeral fever." If it persists for three, four, or more days without local affection it is referred to as "febricula."

In the first place, it is obvious that the disease, which should be spoken of as febricula, is an infection, and may occur in mild or severe form; it has certain definite types and complications, depending, no doubt, partly on the strain and virulence of the micro-organisms concerned in any particular epidemic, and partly on the admixture of the micro-organisms and the introduction of new strains, and possibly also new species. Climatic conditions are also a factor in determining the prevailing manifestations of the disease.

There are four main types commonly seen:

In the commonest the onset is sudden, and the symptoms which have already been described very soon yield to treatment. The temperature chart is characteristic of the descending see-saw type, with about 1 to 2 degrees between the evening and morning records, normal being reached on the fourth, fifth, or sixth day; then follows a short period of subnormal morning temperatures with normal, or slightly above normal, evening records, then a continuous normal or subnormal temperature till convalescence is attained.

In the second type the temperature chart is more like that of a lobar pneumonia of three to five days' duration, with a sudden drop resembling the crisis in pneumonia, and often followed by a post-critical rise.

In the third type the temperature is far more irregular, beginning like a mild attack of the second type, then, after two or three days' normal temperature, relapsing and repeating the phenomena of the early period on a modified and milder scale. There may be several such relapses, or "exacerbations," the chart reminding one of a short attack of trench fever.

In the fourth type the chart resembles that of a mild enteric infection with high evening and much lower morning temperatures, but usually a steady rocking, descending swing, the steps becoming smaller and smaller until the normal or subnormal is reached in from ten to fourteen days.

The striking peculiarities of the disease are the absence of acute symptoms after the first few days, the cleanliness of the tongue, the keenness of appetite, and the rapid recovery. In schoolboys very few seem to be much debilitated by a moderate attack, and they find their legs again with striking rapidity, and need considerable supervision and restraint to prevent them returning to full exercise sooner than is safe. In spite of this they lose weight rapidly, but gain it as quickly under favourable conditions.

Such are the main types of this disease; one may almost predict from the first few cases which occur in a school in a given term to which of the types the outbreak is likely to conform. Once it has started it spreads with more or less rapidity by boarding-houses chiefly (because the infection is mainly a dormitory or study infection), then by forms and classes. The rate with which it spreads depends on several factors, chief of which are: (1) The number of individuals who are partially or completely immune owing to a recent attack, or to prophylactic vaccination; (2) the severity of the weather and the precautions taken to ensure against overcrowding and unnecessary exposure to wet, cold, and overexertion.

Complications.

There are certain phenomena which occur in the course of epidemics of febricula which hardly deserve the title of complications, being rather a part of the disease.

The chief are as follows:

Epistaxis.—Of very common occurrence, especially in the early stages.

Pharyngitis.—Is very common; the appearance of the tonsils is that of raw meat, the soft palate is scarlet, and "sore throat" is complained of.

Tonsillitis.—Is not often severe. In some epidemics cases of true follicular tonsillitis occur, but this is not the rule; occasionally quinsies develop, but not as a rule except in individuals predisposed to their occurrence.

Ear complications are unfortunately far from uncommon; there are two main forms:

1. Those beginning with Eustachian catarrh, and then developing otitis media with acute earache of a most distressing kind, accompanied by severe constitutional symptoms and high temperature. This may subside without perforation of the drum, but frequently relief occurs when otorrhoea appears with a discharge often serous for a short time, but usually becoming purulent within thirty-six hours. The pus contains the micro-organisms which are probably the cause of the disease, reference to which will be made later on, and it is likely that futile attempts to blow a completely blocked nose lead to the infection of the middle ear.
2. Those beginning without Eustachian catarrh, the first symptoms being earache, the drum becoming oedematous, with redness and loss of the usual landmarks. In some cases a blister forms on the outside of the drum, bursts, and discharges a pale thin watery fluid, and the attack is over in two or three days without further discharge. In such cases the walls of the auditory meatus often share in the inflammation, and the middle ear seems to escape.

Conjunctivitis is not at all uncommon, infection taking place through the nasal ducts. In some cases this conjunctivitis is most persistent and only cured by syringing out the ducts and douching the nose, in addition to treatment of the eyes with boracic lotion and protargol, or silver nitrate drops.

Adenitis in a slight degree is common; in cases where the throat is more than usually inflamed it is generally more severe. In individuals whose glands are usually somewhat enlarged, possibly owing to a tuberculous tendency, adenitis is much more marked.

Abdominal Complications.—Constipation is the rule whilst the temperature is high. Vomiting is rare, but occurs. In some epidemics the stomachic symptoms are much more marked than in others, hence the term "abdominal influenza." Jaundice is by no means an uncommon complication, occurring either as a late phenomenon or quite early. In certain epidemics of febricula small outbreaks of jaundice occur, and I cannot but think that they are not remotely allied in origin.

Cardiac complications are rare. Endocarditis very seldom occurs. A muscular weakness of the heart muscle, giving rise to a soft systolic murmur in the dorsal position, is quite common and lasts long into convalescence. Occasionally cardiac dilatation and hypertrophy persist, and require prolonged and persistent care. Rapidity and irregularity of the pulse not uncommonly persist even after convalescence seems to be established. Convalescents should return to exercise very gradually; in a mild attack not for at least three weeks from the onset of the disease.

Pulmonary complications are common in some epidemics, rare in others. Whilst lobar pneumonia is rare, bronchopneumonia and bronchitis are not at all uncommon. Pleural effusions are comparatively rare, but occur. In severe cases empyema may follow. In many cases there is a localized congestion at the base of one lung without any dullness or solidification; it is accompanied by cough, but no dyspnoea, and the symptoms are not those of bronchopneumonia, there being neither distress nor cyanosis nor great rapidity of respiration. A dry pleurisy sometimes occurs. In patients liable to asthma, an attack of asthma may supervene.

Nervous Phenomena.—Of these neuralgia is by far the commonest; it is usually unilaterial, affecting the supraorbital and, less commonly, the infraorbital branches of the fifth nerve. Sometimes it is most persistent and causes sleeplessness, which may lead to serious depression of spirits. Occasionally there are signs of a frontal sinusitis. Great relief is afforded by hot dry applications and administration of caffeine, aspirin, and phenacetin in suitable doses. Delirium is uncommon, but nightmares are common, and somnambulism occurs amongst those in whose family there is a history of epilepsy or its allies, sometimes very remote. Meningitis is rare, and, when it occurs, usually accompanies otitis media, without necessarily the formation of abscess.

Arthritis and nephritis never occur, but a transient albuminuria is common.

Diagnosis.

The diagnosis is usually easy, especially after three or four days of observation. The following are the conditions which must be borne in mind in the early stages:

1. The onset of one of the specific fevers, especially measles.
2. Enteric or paratyphoid fevers. This can be settled later on by agglutination tests. In the early stages a blood culture should be taken if there is any strong suspicion or history which would make the occurrence of these diseases probable.
3. In some cases of early phthisis attacks of this nature occur which may possibly be due to the spread of a tuberculous focus.
4. In some cases of gall stones attacks of cholecystitis occur with very similar symptoms, and not necessarily accompanied by jaundice.

Incidence and Immunity.

The disease is now endemic, with exacerbations at intervals when circumstances are favourable to its appearance in epidemic form, and the number of individuals whom a recent attack has rendered temporarily immune is comparatively low. The following figures will be useful by way of illustration, signifying the number of cases occurring during ten years at Rugby School since 1911, the number of boarders being approximately 550.

Year.	Term.	Cases.	Year.	Term.	Cases.
1911.	Lent	19	1916.	Lent	4
	Trinity	27		Trinity	34
	Christmas	8		Christmas	?
1912.	Lent	129	1917.	Lent	?
	Trinity	40		Trinity	?
	Christmas	21		Christmas	23
1913.	Lent	42	1918.	Lent	22
	Trinity	23		Trinity	187
	Christmas	23		Christmas	17
1914.	Lent	46	1919.	Lent	113
	Trinity	39		Trinity	21
	Christmas	2		Christmas	31
1915.	Lent	150	1920.	Lent	35
	Trinity	32		Trinity	261
	Christmas	31		Christmas	40

During the summer term of 1918 there was a considerable outbreak of febricula in Rugby School, and one may safely say that every boarder was exposed to the infection; 187 cases were admitted to the school sanatorium, or, roughly speaking, one-third of the school succumbed during the term; whilst others, amounting perhaps to 250 in all, contracted it during the holidays.

In the following winter term, when influenza in its severest form was epidemic everywhere, and especially severe in the Rugby district, there was not a single case among the schoolboys, and only 17 cases of a mild "febricula" were admitted into the sanatorium. Of these 17 boys, 4 were amongst those who had contracted it in the previous term. It is noteworthy that no restrictions were imposed upon the school which could possibly have prevented the infection being introduced from the town and neighbouring district into the boarding-houses.

During the next term, when another wave of influenza of severe type passed over the district, the school was again visited by febricula in epidemic form. Of the 187 boys who had contracted it during 1918 Trinity term, 170 still remained in the school, and of these, 31 succumbed out of a total of about 140 cases admitted.

From a consideration of these statistics and a careful examination of a large number of individual cases I have arrived at the following conclusions:

1. That an attack of febricula renders most patients temporarily immune to febricula and influenza.
2. That such immunity lasts from three to nine months, differing (*a*) in different individuals, (*b*) according to the severity of the original attack.
3. That there are some few individuals who are (*a*) highly immune to both diseases; (*b*) highly susceptible to both diseases, and in these individuals one attack conveys very little immunity against a second, such attacks sometimes following closely upon one another; (*c*) highly infectious to others when suffering from even mild catarrh—in fact, "carriers."
4. That some individuals who are liable to asthma, bronchitis, or febrile colds, with or without sore throats, appear to be free from typical attacks of febricula, the reason, no doubt, being that bacteriologically the same or a similar infection is the cause of all these phenomena, which differ rather in the site and vulnerability of the affected tissues than in the infection which disturbs them.
5. That febricula is closely allied to coryza and febrile colds on the one hand, and to influenza, whether "Spanish," "Russian," or "English" in its origin, on the other hand.

It seems highly probable that coryza, febricula, and influenza are an inseparable group of diseases beginning in the upper respiratory passages. If the infecting micro-organisms meet with sufficient resistance locally coryza is produced, exudation is profuse, and the infection is dealt with locally. If, on the other hand, the infection rapidly becomes systemic, there is usually little catarrh, but serious constitutional symptoms with an acute toxaemia or septicaemia appears; in other words, the disease is now "influenza."

As to what determines the clinical phenomena I would suggest that the following three considerations are of great importance:

(i) The relative proportions of the chief infecting organisms present in any given epidemic—that is, streptococcus, pneumococcus, *B. catarrhalis*, *B. influenzae*.

(ii) The presence of other "contaminating" micro-organisms whose activities increase, diminish, or in some way modify the infection.

(iii) The "strains" of these varying micro-organisms and the exaltation or attenuation of their virulence or modification in some other direction by the passage through the bodies of their hosts, whether human or otherwise.

An illustration may be drawn from chemistry. The particular properties of a chemical mixture depend very largely, not only on the particular constituents of which the mixture is composed, but also on the *proportions* in which these constituents are present. Thus ordinary gunpowder consists of the three constituents carbon, sulphur, nitre; but it is only when these three are thoroughly mixed together in certain definite proportions that the full "fighting efficiency" of the mixture is realized. If one or other of the constituents is increased and allowed to preponderate beyond the proportion required for maximum efficiency, the property of the combination is much modified and only "a sort of gunpowder" results.

Hence we are driven to the logical conclusion that "influenza" is a clinical term and not a distinct disease, and although the bacillus of Pfeiffer is almost invariably present, it is not the sole cause of the symptoms, but is only one of an innumerable variety of factors which, taken together, give rise to the alarming phenomena with which we are only too familiar. It is, so to speak, one step worse than febricula, which protects against influenza because it neutralizes the greater portion of the influenza toxins.

It is well known that the influenza bacillus is found in some cases of nasal catarrh, and is a constituent of many stock anti-catarrh vaccines; it is also found in the expectoration of patients suffering from febricula who present no physical signs of pulmonary disease.

Treatment.

I have already referred to the simple treatment of ordinary cases of febricula, and it is not my intention to deal any further with general and drug treatment, but it is necessary to speak of the use of vaccines in these closely allied conditions. There are two methods of vaccine treatment:

1. Prophylactic vaccines.
2. Remedial vaccines.

In both great successes have justly been claimed and in both failures must frankly be admitted. So far as my own experience goes, the prophylactic treatment is much more encouraging than the therapeutic.

For prophylactic purposes one may use (*a*) a stock vaccine, of which there are many good recognized preparations, or (*b*) a "local prophylactic" vaccine. This means, in the case of a school or other concentrated community, a vaccine prepared by swabbing the throat and noses of affected patients and by adding strains obtained from their sputum to the resulting cultures. Such a vaccine is reinforced or modified from time to time by the addition of fresh strains from new cases and kept up to date. It is best administered during the holidays in two doses of increasing strength with a fortnight's interval, and it is probable that the susceptibility to infection is slightly increased after the first dose. It is chiefly on this account that it is advisable to administer the doses in the holiday time, when the chance of exposure to infection can be minimized, and when rest and warmth after the first dose are more easily obtained than at school. Stock vaccines are sometimes efficacious, especially the polyvalent varieties, but their success is more a matter of chance. They should be employed only when, for some good reason, it is not practicable to obtain a local prophylactic vaccine or when success with a particular stock has been proved to be efficacious in a particular type of the disease.

Therapeutically, autogenous vaccines are far preferable to others, but owing to the delay necessitated by their preparation it is often imperative to begin with a stock vaccine. By the time the autogenous vaccine is ready for use it may be too late, and the patient may not be in a condition necessitating such treatment. Still, the possession of an autogenous vaccine made from a given patient is useful for the direct contacts of the patient from whom it is obtained, and possibly also, in a less degree, for the more remote contacts.

In a localized epidemic local prophylactic vaccines should constantly be prepared for future use, so that pace may be kept with the modification of the strain as it passes through individual after individual.

Conclusions.

1. The influenzoid group of diseases may be subdivided for clinical convenience into two groups:

(*a*) Localized infections, with slight toxaemia—namely, coryza, catarrh.

(*b*) General infections, with much toxaemia and possibly septicaemia—namely, febricula, influenza.

2. The severity of symptoms in the second group depends partly on the susceptibility of the patient and partly upon the proportions of the various micro-organisms present, their strains, and the contaminating organisms present. It may be that there are some ultra-microscopic micro-organisms of whose existence we are, as yet, unaware, but I cannot help thinking that the bacillus of Pfeiffer is rightly named *B. influenzae*.

3. Partial and temporary immunity is conferred by an attack of febricula against influenza and by influenza against febricula.

4. Vaccines therefore, to be most efficacious, should be specially prepared from local material, and in an epidemic these vaccines should be systematically reinforced to keep pace progressively with the advance of the disease.

For permission to publish these statistics I am indebted to the Right Rev. A. A. David, D.D., late Head Master of Rugby School.

SPASMODIC STRICTURE OF THE UTERUS.*

BY

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THE tonic contraction of a zone of circular fibres in the uterus was formerly described as hour-glass uterus. This term is not satisfactory, for, although it gives an accurate picture of the interior of the uterus, the general impression conveyed is false, for the exterior of the uterus remains ovoid in contour and the narrowing of the lumen is not, as a rule, perceptible by abdominal palpation or inspection. The condition may also be described as localized tetanus of the uterus; in some types the clinical picture very closely resembles that of tetanus uteri, particularly in the later stages.

Many other terms have been applied to this condition, as Schroeder's ring, Müller's ring, retraction ring, the last of which has been discarded. Eardley Holland's definition, "the active retention of the foetus by the uterus," omits the third stage of labour altogether. I prefer the more convenient term, "spasmodic stricture of the uterus," or, for short, the less definite term used by De Lee, "strictura uteri."

I would urge that the term be applied only to those cases in which the contraction ring is the cause of difficult labour, no other obstruction being present. Where there is other cause of obstruction, and the lower uterine segment is stretched, the term retraction ring should be used.

Eardley Holland has under this heading reported two cases of shoulder presentation with prolapsed arm, where the lower uterine segment was greatly lengthened, and where at the Caesarean section great difficulty was found in extracting the child, owing to the tonic contraction of a ring of muscle. Personally, I should describe these as cases of obstructed labour with well-marked retraction ring.

History.—The earliest report found of this condition was by Smellie in 1743, in his *Collection of Preternatural Cases and Observations in Midwifery*. He describes his case as "a laborious one; the uterus contracted before the shoulders of the foetus."

Since 1907, when Andrews and Maxwell drew the attention of the Royal Society of Medicine to this condition as a cause of dystocia, the subject has been discussed from time to time, and a comprehensive survey of the literature was made by Clifford White in 1913.

Etiology.—The cause is unknown. It is assumed to be some abnormal irritation or irritability of the uterine wall. It is said to occur most frequently in neurasthenic primiparae, and to be associated with malpresentations, premature rupture of the membranes, uterine inertia, prolonged first stage, with repeated vaginal examinations or attempts at manual or hydrostatic dilatation of the cervix. None of these associated conditions were present in my case.

With regard to parity, Clifford White found that the condition occurred twice as frequently in multiparae as in primiparae.

Types.—Strictura uteri or hour-glass uterus has been most frequently described as occurring in the third stage of labour and causing incarceration of the placenta, formerly due in many cases to unwise administration of ergot. I have seen this occur, too, after an injection of pituitary extract during the third stage in an attempt to hasten a dilatory placenta. The spasm, however, may occur during any stage of labour and at any part of the uterus. It will then be as follows:

1. In front of the whole child.
2. Around some part of the child, as in my own and the majority of cases, around the neck and obstructing the shoulders; or, as in a case reported of breech presentation, around the arms and body. Lady Barrett has reported a case where the ring was formed around the neck of a hydrocephalic foetus presenting by the breech.
3. Following one twin and ahead of the second child.

The Contraction Ring.—As regards position, although it is certainly true that the ring may form at any part of the uterus yet it has most usually occurred at the level of Bandl's ring—that is, where the upper and lower uterine segments meet; hence the confusion as to nomenclature. The contraction ring may run very obliquely across the uterus, as in that case reported by Clifford White where it corresponded to the groove between the thigh and body of the child. He considers that the contraction ring is largely formed by the close moulding of the uterus to the foetus, and doubtless this is true in those cases where the membranes have ruptured early and the liquor amnii has drained away. Jardine states that in all his cases where the ring has been situated around the neck of the child the membranes have ruptured before labour has begun at all. These observations do not apply to my case, in which the membranes had to be ruptured artificially.

Mortality.—The condition is very serious. Hedley gives the maternal mortality as 40 to 50 per cent., the foetal mortality as 60 per cent., and states that 10 per cent. of the foetuses are macerated. The child dies of asphyxia, the contracted muscle interfering with the oxygenation of the foetal blood. The same circulatory disturbance allows infection of the uterus and its contents to occur, and the woman may die of sepsis or exhaustion.

Report of Case.

The patient, Mrs. B., a quartipara, gave the following history of previous labours:

1. In labour for three days and nights; child born alive; forceps.
2. Twins. One born alive, but died in a few minutes, forceps. The other had to be taken away, was born dead, and disposed of without either parent being allowed to see it.
3. Child born alive, 9 lb. weight; forceps. Subsequently the patient spent five weeks in hospital for repair of complete perineal tear.

Her mother told me that all these labours had been prolonged and very difficult, that the doctor had said that there was "a shelf inside her," preventing the birth. This appears to me to suggest strongly that the uterine condition was habitual to this patient with every labour. I was therefore prepared for trouble, but when I saw the patient a few days prior to labour I could find nothing abnormal. The child was presenting by the vertex, and the pelvis showed no sign of contraction. The abdomen was pendulous; I judged that there was a large quantity of liquor amnii, and the woman had insisted upon doing heavy housework, such as scrubbing, up to the last without wearing any abdominal belt or other support.

Labour started at midnight, but the pains were very slight for some hours. I was called at 8 a.m. The patient was still in the first stage, the os dilating slowly, membranes intact. She had been up all night, so I gave her 1/4 grain of morphine and left with instructions that she was to go to bed and sleep. I returned at 11,

*Read before the North of England Obstetrical and Gynaecological Society at Sheffield, November 18th, 1921.

and found the nurse very worried; she said that the patient had been in great agony; the patient herself said that the pain was continuous and very severe. For a while the pain appeared to be due to tonic contractions of the uterus, the contractions increasing and then diminishing, but never completely relaxing. The woman's general condition was extremely good, but she was obviously in tremendous pain.

The cervix being three-quarters dilated, I ruptured the membranes and waited for the head to fix, keeping the patient quiet with chloroform for about two hours. It was now thirteen hours since the onset of labour; the head showed no sign of fixing, but was ballotting freely in the pelvic brim, and as I could perceive no cause for the delay I determined to make an intrauterine examination under full anaesthesia. This I did under ether, and found the following state of affairs:

The cervix was fully dilated and empty, the free edge hanging flaccid in the upper part of the vagina. During each pain the head would descend into the cervix only to recede again with equal regularity. I palpated the head, which was normal and presenting by the vertex. The pelvis was very roomy. Without any difficulty I passed my hand up beside the head and found that the uterine muscle was firmly contracted in a ring around the child's neck. Having passed the tip of one finger through this ring to confirm the diagnosis I withdrew to consider the position.

Both mother and child were in very good condition, but the contraction ring must now have persisted for some hours in spite of morphine and prolonged chloroform followed by deep ether anaesthesia, and as the force and frequency of the contractions were really alarming I decided to have the patient moved into hospital, where if the spasm did not relax within a reasonable time the operation of Caesarean section would be available.

The patient was not allowed to regain consciousness, but was kept quiet with chloroform until shortly before her arrival at hospital about one and a half hours later, when the supply gave out. As the ambulance drew up at the hospital door the child was born spontaneously—a healthy boy weighing 9 lb.

The subsequent history was uneventful; the patient was up and out on the eleventh day.

Remarks.

There are a few points in the case which I think deserve emphasis:

As regards the suggestion that the condition was habitual, one case has been reported where the contraction ring recurred at three successive labours in the same patient.

The symptoms are confusing. One does not expect to find a tight contraction ring in a patient who is obviously not threatened with rupture of the uterus, in a patient having a roomy pelvis and carrying a normal child in a normal position. However, it is just under these circumstances, where labour is unwarrantably prolonged, that one should suspect the presence of spasmodic stricture.

The following symptoms struck me as most obvious:

(*a*) Contractions very strong, frequent and painful, for a while practically continuous; uterus very tender.
(*b*) No distension of lower uterine segment; contraction ring neither visible nor palpable externally.
(*c*) The head ballotting freely in the pelvic brim, advancing and retiring again with each pain.
(*d*) The woman's general condition extremely good.

I have tabulated these symptoms for comparison with those commonly found in obstructed labour with threatened rupture of the uterus, as described by Tweedy.

Obstructed Labour. *Retraction Ring.*	Spasmodic Stricture. *Contraction Ring.*
1. Vagina hot, dry, walls swollen, lips oedematous.	1. For some hours vagina remains moist and introitus normal.
2. Vagina ballooned, fornices pulled up.	2. No ballooning nor stretching of fornices.
3. Cervix may be fully dilated and drawn completely up, or may be imprisoned in pelvis, thickened and swollen from oedema and effusion of blood.	3. Cervix flaccid, empty, hanging loose in folds, no signs of pressure.
4. Contractions continuous or almost so, fundus and especially lower uterine segment very tender.	4. Contractions continuous or almost so, very powerful, tenderness marked.
5. Lower uterine segment becomes progressively distended, the child forced down into it, the body of the uterus steadily retracting. Retraction ring mounts higher and higher, the groove being visible and palpable externally.	5. Contraction ring remains at one level. Position of child unaltered. No groove visible or palpable externally.
6. Presenting part high up, fixed.	6. Presenting part high up, unfixed.
7. No advance of presenting part.	7. Advances with each pain and recedes again at once.
8. General condition poor. Face anxious, pale, sordes round lips, rapid pulse, exhaustion.	8. General condition good for some hours, colour good, pulse good, no sordes. Frantic with unavailing pain.

As regards No. 4 my case differs from the majority of those recorded in these points: that the contractions were very powerful and for a time tonic, and that the uterus was very tender. Records of other cases state that the uterus has, as a rule, been in a state of inertia and there has been no tenderness. Galabin in 1897 described the spasm in hour-glass uterus in the third stage as analogous to rigid cervix of the first stage, and says that it is always associated with absence of active expulsive pains.

It is possible, then, that there are these two types of spasmodic stricture:

1. Associated with uterine inertia and caused by local irritation; due in part to early rupture of the membranes and manipulations; uterus not tender.
2. Associated with powerful tonic uterine contractions, cause unknown; presumably due to some inherent irritability of the uterine muscle; uterus very tender.

As regards No. 5 there has been some discussion. Clifford White has queried the first entry, saying that neither he nor some of his colleagues had ever felt Bandl's ring per abdomen in a case of obstructed labour. On the other hand, some writers when reporting cases of dystocia due to contraction ring have stated that the ring was externally palpable.

Diagram 1 shows the outline of a uterus during the second stage in normal labour, the three constrictions being of course the upper limit of the lower uterine segment, the internal os, and the external os.

Diagram 2 shows the outline of a uterus during the second stage in obstructed labour with threatened rupture. The vagina, cervix and lower uterine segment are all stretched up and ballooned out to receive a large portion of the foetus. The upper segment has retracted and the retraction or Bandl's ring is well marked.

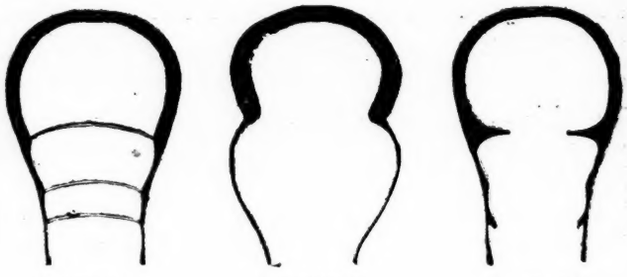

Diagram 1. Diagram 2. Diagram 3.

Diagram 3 shows a uterus during the second stage in a case of spasmodic stricture. The vagina is normal, the free edge of the cervix hangs loose and flaccid, there is no distension or ballooning of any part. In my case the head lay in the lower uterine segment and the upper part of the cervix, firmly held by the neck. The outline of the uterus remained ovoid to palpation and inspection.

I am aware that these diagrams may appear exaggerated, particularly to anyone who has seen the illustrations of those cases in which the uterus was removed entire and afterwards frozen and sectioned. What remained of the contraction ring is seen as a ridge in the uterine wall, so slight that one cannot imagine it to have caused obstruction. This diagram shows the impression conveyed to my mind at the time of intrauterine examination.

Treatment.

It is universally acknowledged that the correct treatment of hour-glass uterus in the third stage of labour, uncomplicated by haemorrhage, is morphine and rest. By analogy, one would suppose that many cases occurring earlier in labour will yield to such treatment, and doubtless this is true, many of such cases passing unrecognized. But there are other cases in which the spasm will not relax under any expectant treatment. A case has been reported which was watched for thirty-six hours without relaxation. Willett has reported a case which only yielded to continuous traction applied for three hours after craniotomy.

Great anxiety attends any intrauterine operation, on behalf both of the child and the mother. Wilhelm, of Missouri, reported six cases treated by manual dilatation. In five of these he turned the child and extracted by the breech. All the children were stillborn. In the sixth case he applied forceps after manual dilatation and extracted the child alive. He states, as a result of this experience, that the foetal mortality is very high, but there is little danger to the mother in manual dilatation and delivery. In this opinion I cannot concur, nor do I find it corroborated by other authorities. I agree rather with Hedley, who says that manual dilatation carries the threefold danger of rupture, shock, and sepsis. There are records of deaths from these causes following manual dilatation. De Lee's opinion is that a uterus in localized or general tetanus will not rupture spontaneously,

but there is considerable danger of tearing the uterus by operation during the spasm.

Incision of the ring per vaginam is too dangerous to be attempted. Version is absolutely contraindicated; it is, moreover, often impossible.

The application of forceps is very rarely helpful. Where the ring is around the child's neck the blades almost invariably slip. If they do succeed in dragging the head down to the vulva it simply carries the ring down with it, unless the latter has been torn in the process. A case has been reported where the ring had formed around the shoulders of the second of twins, and where very gradual traction with forceps caused a tear of the vagina, cervix, and lower uterine segment into the broad ligament. The application of forceps, therefore, is not advisable in the case of a living child. Where the child is dead forceps with cleidotomy and steady traction will doubtless be sometimes successful.

Craniotomy also has but a limited field, even within that class where the child is already dead. Embryotomy has succeeded in a few cases, in others it has been impossible to deliver even after evisceration.

There is no doubt that where the child is dead the ring in the majority of cases will yield to slight steady traction if that part of the foetus endeavouring to enter the ring be cone-shaped. Division of the clavicles will therefore be of use where the shoulders are obstructed. Again, in that case of breech presentation reported by Lady Barrett to which I have already referred, a hydrocephalic head was successfully extracted through the ring after puncture of the spinal canal.

There remains but Caesarean section. Mr. Munro Kerr has said very recently that probably Caesarean section will in future be more frequently performed for the relief of this condition. And it surely is the ideal treatment for obstinate cases if only the uterus be not already infected. Where infection has already occurred the section should be followed by hysterectomy, or, if the child be dead, a hysterectomy alone is indicated.

With regard to treatment I am impressed by the following facts:

1. The difficulty, danger, and high mortality attending active interference.
2. That the only abnormal condition is a localized spasm of the uterine muscle.
3. That deep anaesthesia diminishes muscular spasm.
4. That repeated examinations increase spasm and are therefore contraindicated.
5. That in the case I have reported deep and prolonged anaesthesia alone resulted in the spontaneous delivery of a healthy child.
6. That in the previous confinements of this patient forceps were applied on every occasion, with an infant mortality of 50 per cent.

As a result I consider that the correct treatment for this condition is *deep anaesthesia, if necessary prolonged, and nothing else.* This treatment will, I believe, very nearly eliminate the necessity for Caesarean section.

BIBLIOGRAPHY.

Holland: *Journ. Obstet. and Gyn. Brit. Emp.*, 1911. xix, p. 526.
De Lee: *Principles and Practice of Obstetrics*, 1913, p. 574.
Andrews and Maxwell: *Proc. Roy. Soc. Med.*, 1908, i, Obstetrical and Gynaecological Section, pp. 138–50.
Clifford White: Ibid., 1913, vi, pp. 70–85.
Barrett: Ibid., p. 86.
Jardine: *Journ. Obstet. and Gyn. Brit. Emp.*, 19 1, xx, p. 11.
Hedley: *Pract. Encyclop. of Mid. and Dis. of Women*, ed. Fairbairn, 1921, p. 204.
Galabin: *Manual of Midwifery*, 1897, p. 754.
Tweedy: *Practical Obstetrics*, p. 263.
Willett: *Proc. Roy. Soc. Med.*, 1912, v, p. 335.
Wilhelm, J.: *Missouri Med. Assoc.*, 1910, xvi, p. 295; quoted *Surg., Gyn., and Obstet.*, Abst., January, 1920, p. 56.
Munro Kerr: BRITISH MEDICAL JOURNAL, 1921, October 1st, p. 519.

RECTAL ADMINISTRATION OF TARTARATED ANTIMONY IN BILHARZIASIS.

BY

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ALTHOUGH a number of papers have appeared recently on the treatment of *Schistoma haematobium* by tartar emetic, the method invariably advocated has been intravenous injection. For any parasitic infection of the general circulation this could hardly be improved upon, as the drug enters the blood stream in such quantities and at such precise times as the introducer desires. But where it is desired to destroy a parasite whose habitat does not generally extend beyond the portal circulation it seems more reasonable to introduce the parasiticide directly into the radicals of that system, so that it may meet with what it is intended to kill in greater concentration than if injected into a superficial vein and accordingly distributed to all parts of the body before reaching its object.

As, however, accessible veins of the portal circulation are not available for injection, we are thrown back upon the absorbing powers of the rectal mucous membrane, reached by solutions of the tartarated antimony given as small enemata. The drug absorbed in this way enters the superior haemorrhoidal vein, where, in cases with rectal symptoms, the worms are understood to lay their eggs.[1] The free intercommunication between this vein and the vesical plexus allows of the drug passing to the bladder wall, in which oviposition is the rule in cases with haematuria or other vesical symptoms. That part of the dose which does not find its way into the vesical veins passes up to the portal vein itself, where the pairing of the worms takes place, and so reaches the liver, where the younger immature forms are found, and in this way exerts its maximum action upon all stages of the creature's life cycle before being merged into the general circulation, in which worms are only found, Kartulis tells us, in the inferior vena cava; this is the first part to be reached by the antimony.

Whether the portal system can be "sterilized" by the administration of a few large doses in this way, and the treatment reduced to, at most, one or two administrations, must be left for further investigation. The purpose of this preliminary note is to draw attention to the tolerance of the rectum to what would be considered very large doses if given in any other way, and in particular to emphasize the convenience of this method where the personal idiosyncrasy of the patient, or, in women and children, the difficulty of locating and entering a vein, makes the intravenous method undesirable.

Indeed, as an alternative it must always be of practical value to practitioners who, for whatever reason, do not go in for intravenous work, or who find the necessary sterilization of solutions, needles, etc., an undesirable call upon their time, apart from the need for giving an intravenous injection personally. Finally, experience of the high lying plateaux of Central Africa goes to show that, both in the rains and in the cold season which succeeds them, many days are most unsuitable for finding veins in the subcutaneous tissues of naked and shivering patients; at times weeks have passed without days sunny enough to give what may be called "good veins." At such times, when many cases of bilharziasis are waiting treatment, the method advocated here is a real boon.

Four cases only will be cited to illustrate the possibilities of intrarectal treatment.

CASE I.—*Child with Old-standing Bilharzia Infection of the Bladder Cured after Fourteen Intrarectal Injections.*

John, a half-caste boy aged about 7, who had come up country from Southern Rhodesia eighteen months before, complained of suprapubic pain and of passing blood at the end of micturition; these symptoms were of some four or five months' duration. There was a history of a streak of blood in the stool, which had defied treatment for some time, but at that time no search seems to have been made for schistosoma eggs in the faeces. Examination of uncentrifugalized specimen of urine revealed terminal spined ova in astonishing numbers; the specimen was red and loaded with urates. No eggs were found in faeces. Treatment was commenced with an injection of 1 grain in 100 c.cm. of water at body temperature. A few drops of tincture of opium were added, but as there was no intolerance this was not repeated. Two days later a dose of 2 grains was given in the same way, and thereafter for three weeks the drug was given every second day in gradually increasing doses—2 grains, 3 grains, 4 grains, 5 grains, etc. During the first week the urine cleared of blood, but after eleven doses a few shrivelled eggs were still to be seen. The 12-grain dose was repeated twice, and two days later 14 grains were given, after which no sign of an egg was found on examining the last part of a specimen passed in the morning on rising and centrifugalizing the sediment after some hours' standing. At no time in the course of treatment did the boy show any sign of nausea, nor were his appetite or spirits in any way affected. He received in all 104 grains.

CASE II.—*Child with Enlargement of Liver, Ascites and Anaemia: Schistosoma Ova in Faeces: Cured after Fourteen Injections.*

Simiyon, a boy of perhaps 6, was brought in with a much-distended belly, containing a quantity of free fluid; the liver was two fingerbreadths below the costal margin. The boy was anaemic and listless.

Examination of the faeces showed numbers of ova, chiefly lateral-spined in type. He was treated *pari passu* with Case I, and in the same doses up to 12 grains; this was then followed by one of 16 grains. No eggs were found thereafter; the abdomen had decreased in size so as to be no larger than that of the run of native children of his age, and although the liver was still easily palpable

the free fluid had disappeared. Under tonics the anaemia improved, and he was dismissed after six weeks a totally different boy, having received in all 108 grains without showing any tendency to nausea or vomiting.

CASE III.—*Lad with Haematuria Cured in Eight Attendances.*

Naaman, an apprentice carpenter, aged about 17, complained of passing blood in the urine for the previous month or two. The urine was smoky, and on centrifugalization showed ova of bilharzia. He came every other day for three weeks, receiving doses of 2 grains, 4 grains, 6 grains, etc. The urine cleared after the third injection, and by the time that he had received eight doses, amounting in all to 68 grains, the urine was found to be free of ova. He spent his midday rest hour receiving the injection and lying down, but otherwise was not away from his ordinary work.

CASE IV.—*Old Man with Pronounced Haematuria Cured after Four Injections Administered in Five Days.*

This old man could give no history of his complaint, but the urine was of a thick port-wine appearance with a sediment of urates. Ova were found easily. The first dose was 5 grains; this was followed two days later by a dose of 8 grains; the urine was then amber in colour without a trace of blood. On the next two days he received successively 10 grains and 12 grains; treatment was then discontinued as the centrifugalized specimens of urine examined contained no more ova. He had been given 35 grains in the five days without showing any symptom of intolerance.

The treatment was in all these cases carried out in the following manner: The bowels were caused to move daily in the morning by giving if needed a mild laxative at night. Some three hours afterwards the patient lay down upon his left side, and the dose, made up to about one or two ounces by the addition of warm water, was administered by the hospital orderly by means of a funnel attached to a No. 12 rubber worm catheter, which after being lubricated was passed well up into the rectum; it is advisable to compress it firmly between the finger and thumb as it is being withdrawn so that the whole of the solution be introduced. The patient has been directed to lie down for a couple of hours, but whether this is essential has not been finally settled. In some cases the bowel must be cleared first by a soap and water enema, but this is not the rule by any means.

Conclusions.

1. The results of intrarectal administration of tartarated antimony are in no way inferior to intravenous.
2. It economizes time, and is free from all risk.
3. Nausea and vomiting occur less frequently than when the drug is run into the general circulation.
4. Case IV suggests the possibility of reducing the number of attendances for treatment considerably.

REFERENCE.

[1] Castellani and Chalmers: *Manual Trop. Med.*, second edition, p. 482.

SOME FUNCTIONS OF THE SUPRARENAL GLANDS.

BY

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THE medullary portion of the suprarenal gland (derived, with the cells of the sympathetic ganglia, from the neuroblasts of the central nervous system) is well known to be concerned with the elaboration of an internal secretion which contains as one of its active principles the substance known as adrenaline; but the part played in the animal economy by the cortex (developed from the mesothelium of the genital ridge) is still obscure. In view of the vital importance of this organ some experimental results recently obtained in rats seem to be worth recording. Even though there is no evidence that the suprarenal gland of rats is functionally homologous with that of man, yet there is no evidence to the contrary, and some of the findings are most suggestive.

The experiments consisted of feeding or inoculating white rats of varying ages with different preparations of suprarenal cortex for varying periods, and then killing, and examining various organs histologically. The preparations used were as follows, and I am much indebted to these firms for their courtesy and assistance in obtaining these preparations:

1. Adcortogen (by Carnrick Co.), which was dried cortex, and contained some adrenaline.
2. Cortex lipoids (by British Organotherapy Co.), which was a liquid extract containing only the lipoids.
3. Cortex extract B (by Carnrick Co.), which was a watery extract of cortex, containing no lipoids but some adrenaline.
4. Cortex extract C (by Carnrick Co.), which was the same as B, but free from adrenaline.
5. Adrenaline (by Parke, Davis). This was used to obtain control animals for those treated with cortical preparations which were found to contain adrenaline.

In all, 118 animals were used, and the following are the most striking of the results obtained. It is not proposed to give here all the details of the experiments, as it is hoped that the work will be published in full elsewhere.

The general health of the animals was not affected, except rarely when using adrenaline-containing extracts. But an extraordinary formation and deposition of fat was obtained in most of the animals, thus confirming the observations of others that the suprarenal cortex plays a part in controlling the fat metabolism of the body, which may thus become perverted in hyperactivity of the gland. In addition, nearly all the rats developed a curious condition of the coat; the fur was thick, fine and glossy (as it should be in health), but came out very freely on handling; the hair follicles microscopically showed degeneration. This condition was not due to the adrenaline, and points to a connexion between suprarenal cortex and calcium metabolism, as perversion of the latter is known to give rise to nutritional disturbances of the skin.

The organs to which attention was directed more particularly were those of internal secretion, and the following are the most conspicuous of the results obtained.

Thymus.—The gland was obviously affected by the treatment. There was most marked increase of invading mast cells; some of these cells are apparently always present in this animal, but the significance of this great increase is not clear. The gland was apparently responding to stimulation in the direction of involution, as indicated by an increase in the Hassall's corpuscles and chromophobe complexes, normally so scanty in the rat. In many cases, also, there were present large clear eosinophil cells of endothelial type invading the gland by the lymph channels, and sometimes completely destroying the normal structure. The appearance of these cells, both here and in the haemolymph glands, can hardly be a specific effect of the treatment, but probably indicates some degree of lowered resistance, the lymph glands being the organs first attacked.

Pancreas.—The gland appeared normal, but two points of interest may be mentioned. First, in the series where adrenaline was being given, a definite thickening of blood vessel walls, both here and in the spleen, was frequently found; secondly, lymphocytes were usually present in the islets. This lymphocyte increase was not confined to the pancreas, but was found in many organs, and is interesting in view of the increase commonly found in Addison's disease. The suprarenal gland, as a whole, appears to stimulate the appearance of lymphocytes in the tissues (no blood counts were made); perhaps there may be some connexion between the sexual immaturity of status lymphaticus and the influence exerted by the suprarenal cortex on the gonads.

Spleen.—Generalized lymphocytic increase was well shown, and the vascularity and blood pigments were very constantly increased. Adrenaline appears to affect the organ adversely; the capillaries were found engorged with blood, lymphocytes were frequently found below the endothelium of the blood vessels, and the typical structure was lost. Increase of giant cells was frequently observed, but no evidence of tuberculous infection.

Male Gonads.—The treatment at first hastened the genital development, but, when continued for some time, in every case degeneration of the seminiferous tubules occurred. The breakdown was very marked, but after a long interval some repair was usually found. The interstitial tissue was also affected, the lipoid constituent causing a cellular decrease and the non-lipoid constituents an increase; in this way a balance may be kept by the full action of the gland. The interstitial tissue contained a large quantity of eosinophil exudate in nearly every case.

Female Gonads.—Sexual precocity in the female rat is difficult to determine experimentally. Degeneration of the older follicles was always found; the younger follicles appeared normal, and therefore were either more resistant to treatment or had undergone repair. The interstitial cells were constantly increased.

Suprarenals.—Evidence was obtained that normally cells atrophy at the medullary border, and that regeneration occurs from the zona glomerulosa; this change was found to be accelerated in pregnancy, and could be stimulated by treatment with cortical preparations more easily in the female

than in the male. Acute degeneration of the whole gland followed inoculation with the non-lipoid cortical constituents, together with adrenaline.

Thyroid.—The gland was apparently stimulated by the cortex, but adrenaline over-stimulated it to the point of exhaustion.

Haemolymph Glands.—The most striking change observed was in the pigment. Three types could be distinguished. First, the yellow-brown amorphous pigment due to breakdown of haemoglobin; this was always increased, showing that the suprarenal stimulates blood destruction. Secondly, bright yellow pigment in fatty droplets, probably representing some of the inoculated lipoid material laid down in altered form in these glands. Thirdly, brown pigment found in special cells of varying size and shape in varying amounts; these are melanoblast cells, and were found most frequently in the haemolymph glands, occasionally in the true lymph glands, and rarely in almost any situation, distributed by the lymph channels. The suggestive point about these cells is that they were only found when the preparation contained adrenaline, and never under any other conditions. Excessive or perverted activity of the suprarenal medulla, therefore, may be directly responsible for the pigment formation of Addison's disease and may also play a part in the formation of pigmented tumours.

Conclusions.

Although it is not possible to apply results obtained with certain animals to another species, nor possible always to distinguish between glandular hyperactivity and perverted activity, nor between purely structural hyperplasia and functional hyperplasia, yet the following conclusions seem worthy of record:

1. The suprarenal cortex plays a part in fat metabolism and in calcium metabolism.
2. The suprarenal cortex stimulates the thymus to involution.
3. The suprarenal cortex controls the gonads in both male and female with respect to both reproductive and interstitial cells.
4. The suprarenal gland acts as a whole in controlling general health, in controlling haemoglobin breakdown, in regulating the production of lymphocytes, in regulating the production of mast cells, and in stimulating the thyroid.
5. The suprarenal medulla is connected with the formation of melanoblast cells.
6. Inoculation with various suprarenal extracts appears to lower the resistance of experimental animals, as is indicated by the condition of the lymph and haemolymph glands.

I should like to thank Professor Cullis for her continued interest and helpful criticism throughout this work. The expenses of this research are being defrayed by a grant from the Royal Society.

THE VIRULENCE OF DIPHTHERIA-LIKE ORGANISMS.

(Further Note.)

BY

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AND

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THE bacteriological diagnosis of diphtheria, though based generally on the morphology and cultural characteristics of the *Bacillus diphtheriae*, must depend ultimately on the animal test, whereby the pathogenicity of the infecting organism can be definitely established. While the animal test is advisable, even in clinical work, as a periodical check on the routine methods of diagnosis, in dealing with the carrier problem and prevention of diphtheria it is indispensable. The time may come when some other test may replace it; this is, however, very improbable.

By the intracutaneous method (Eagleton and Baxter, 1921) a large number of pathogenicity tests can be carried out speedily and economically. Further experience of this method has served to confirm our belief in its reliability, evidence of which is given in the second part of this paper. The first section deals with 161 cultures of diphtheria-like organisms, all of which were tested for pathogenicity, and the majority for fermentative power. Slopes of Loeffler's serum medium were employed for primary cultures, and plates of the same medium for subsequent purification.

The intracutaneous method was used for testing pathogenicity, checked frequently, especially when the findings were negative, by subcutaneous injections, as will be described later.

I. EXAMINATION OF CULTURES.

The cultures were derived from three sources, and each group will be considered separately.

(*a*) Thirty-seven cultures from cases of clinical diphtheria gave the following results:

Morphology.	Glucose.	Saccharose.	Virulence.
B. diphtheriae	Acid	Negative	+ 33
B. diphtheriae	Not done	Not done	+ 3
Hoffmann's bacillus ...	Not done	Not done	− 1
			37

Of the 33 virulent cultures of *B. diphtheriae* the "sugar" reactions of which were tested, 2 fermented saccharose as well as glucose. These cultures, after plating, had been maintained on Loeffler medium for over ten weeks, and were seemingly pure, judging by smear preparations and appearance of growth. On replating, however, a very slight contamination was found—in one case a coccus and in the other a Gram-positive bacillus which produced acid in saccharose. When freed from these impurities the two strains failed to ferment saccharose.

(*b*) A single throat swab was taken from 112 patients who had had diphtheria and had completely recovered at the time of examination. Nineteen strains of *B. diphtheriae* and Hoffmann's bacillus were obtained, and gave the following results:

Morphology.	Glucose.	Saccharose.	Virulence.	
B. diphtheriae	Acid	Negative	+ 9	10
B. diphtheriae	Not done	Not done	+ 1	
B. diphtheriae	Acid	Negative	−	1
Hoffmann's bacillus ...	Negative	Negative	− 5	8
Hoffmann's bacillus ...	Not done	Not done	− 3	
				19

Five of the nine virulent strains, when first tested in sugars, produced acid in saccharose; this was, however, due to a very slight degree of contamination. The fermentation of saccharose in these cases was generally slight, and might not take place till after the third day of incubation.

The most difficult contamination to eliminate is a Gram-positive sporing bacillus, which may lie dormant for weeks in a culture on solid medium. This organism ferments glucose and saccharose, and, when abundant or in pure culture, liquefies Loeffler medium.

(*c*) Comprises 105 cultures from 67 carriers, none of whom had had diphtheria, but most of whom had been in contact with a case. The results found in this group were as follows:

Morphology.	Glucose.	Saccharose.	Virulence.	
B. diphtheriae	Acid	Negative	+ 30	33
B. diphtheriae	Not done	Not done	+ 3	
B. diphtheriae	Acid	Negative	− 52	61
B. diphtheriae	Acid	Acid	− 8	
B. diphtheriae	Not done	Not done	− 1	
Hoffmann's bacillus ...	Negative	Negative	−	11
				105

Of the 30 virulent cultures, one produced acid in saccharose, but as with similar cases in the other groups, a very slight contamination was found to be responsible.

When we compare these three groups we notice that in Group A only one culture was avirulent and that was Hoffmann's bacillus. All the remainder were virulent, and, except for three not tested, gave typical "sugar" reactions. In Group B we find 10 virulent and one avirulent *B. diphtheriae*, the remainder being Hoffmann's bacillus; whereas in Group C, of 94 bacilli morphologically resembling *B. diphtheriae*, only 33 were virulent; excluding the eight strains which fermented saccharose (*B. xerosis*) and the one avirulent

strain, the "sugar" reactions of which were not tested, we find 33 virulent and 52 avirulent.

Of the cultures of *B. diphtheriae* from clinical cases we find 100 per cent. virulent; of those from convalescents 90.9 per cent.; while of the cultures from carriers which were typical on morphology and "sugar" reactions we find only 38.8 per cent. virulent.

These results agree with the findings of most other workers in so far as they show that avirulent strains are rarely found except in people who have never, or at all events not recently, suffered from diphtheria (Graham Smith, 1908, Arkwright, 1912).

Fermentation Reactions.—Of the 161 cultures in the three groups the sugar reactions were tested in all except twelve instances. We used as a routine only glucose and saccharose. Thirty strains were also examined for action on dextrin, salicin, and litmus milk. We found, however, that by using glucose and saccharose alone we obtained as much information as we could from the more extended set of reagents. All the virulent *B. diphtheriae* which we have tested hitherto produce acid in glucose but not in saccharose. The same reaction was, however, given by 53 out of 61 avirulent cultures, though the amount of acid produced by two of them was very slight. We have not so far met with a virulent strain which, when absolutely pure, produces acid in saccharose. Graham Smith (1908) has reported several from one epidemic. Our difficulties in getting rid of contamination by saccharose-fermenting organisms have been noticed. We succeeded only by repeated plating, and in more than one instance after picking off several colonies from the same plate and testing the sugar reactions of each, we found that some of the "single" colonies failed to ferment saccharose, whilst others did so.

We have so far found no evidence that a culture may "lose its virulence" on being kept. It need only be mentioned that smears must be made from every culture before it is used for inoculating animals. One culture in our series appeared to be a pure culture of Hoffmann's bacillus and was avirulent by intracutaneous test. Two months later, when examined for morphology, sugar reactions and virulence, it was found to be indistinguishable from *B. diphtheriae* on morphology and "sugar" reactions, and to be virulent. The culture was plated, and from the plate a number of colonies were picked off. Some proved to be pure cultures of Hoffmann's bacillus, others *B. diphtheriae*. Hoffmann's bacillus and *B. diphtheriae* may therefore live in the same tube for months and neither be destroyed. A culture originally avirulent may, when next examined, be found virulent because the *B. diphtheriae* are in enormous excess, and vice versa.

II. Reliability of Intracutaneous Test.

We have compared the results of determination of virulence by the intracutaneous method with those obtained by the methods hitherto mostly used—that is, the subcutaneous injection of a forty-eight hour broth culture or of the growth from a Loeffler slope.

We chose for comparative testing by the subcutaneous method 83 cultures which had been tested and classified by the intracutaneous method; of these, 57 were avirulent and 26 virulent. All these cultures were subsequently tested by the subcutaneous injection into guinea-pigs of either an emulsion of the whole growth on an eighteen-hour Loeffler slope culture or of 2 c.cm. of a forty-eight or ninety-six-hour broth culture. Twenty-one of the cultures were tested in two ways by the subcutaneous method, the emulsion of a Loeffler slope culture and 2 c.cm. of a forty-eight or ninety-six-hour broth culture being injected subcutaneously into separate guinea-pigs.

As a control a known virulent culture, a Park 8 strain, was used throughout. A small fraction of an eighteen-hour Loeffler slope culture of this organism killed, while of a forty-eight-hour broth culture 0.01 c.cm. killed; smaller doses were not tested.

The batch of broth employed was in constant use for the routine production of high grade toxin; we were, therefore, certain that the broth used in testing our cultures was one suitable for the production of toxin.

In every instance the results obtained by the intracutaneous and subcutaneous methods agreed—that is, no culture proved to be virulent by one method but avirulent by the other.

We think it may be justly claimed that this method of testing virulence is not only rapid and economical but simple and reliable.

Results of Repeated Swabbing.

We had the opportunity of examining swabs taken from seven notified "carriers" who were under observation for two to four months. Twenty-six cultures of organisms morphologically indistinguishable from *B. diphtheriae* were obtained from these carriers and examined by the intracutaneous method. One child gave four "virulent" cultures over a period of two months. One gave a "virulent" followed by an "avirulent" culture. In one case an "avirulent" *B. diphtheriae* and a Hoffmann's bacillus were found on different dates over a period of three months. Cultures indistinguishable from *B. diphtheriae* but, when isolated, found to ferment glucose and saccharose, were repeatedly obtained from the throat swab taken from two children.

Results and Conclusions.

Of 161 strains cultivated from cases of diphtheria, convalescents and carriers, 79 were virulent *B. diphtheriae*, 62 were avirulent *B. diphtheriae* (including 8 *B. xerosis*), and 20 were Hoffmann's bacillus (all avirulent).

Cultures of *B. diphtheriae* from cases of diphtheria were virulent in 100 per cent. of those examined; from convalescents in 90.9 per cent.; from carriers in only 38.8 per cent.

Sugar reactions were carried out with 149 cultures; glucose and saccharose were the only reagents used as a routine. The value of "sugar" tests may be summed up as follows:

If glucose is not fermented, the culture is not virulent *B. diphtheriae*.

If glucose is fermented but not saccharose, the organism may be virulent or may not.

If both glucose and saccharose are fermented, the organism may be *B. xerosis*, may be contaminated, or (Graham Smith) may be virulent.

We have found no evidence that virulent cultures, if isolated in a pure condition, become avirulent.

For absolute diagnosis, a culture morphologically resembling *B. diphtheriae* and capable of producing acid in glucose must be submitted to a virulence test.

The intracutaneous method is simple, economical, and apparently reliable.

Our thanks are due to those who have provided us with material for this research, especially Dr. F. Foord Caiger and Dr. Graham Forbes. Without the help of Dr. Okell and our other colleagues and the guidance of Dr. O'Brien, our work would have been still less complete than we have left it. Finally, to Mr. Tottem and the rest of the laboratory staff we hereby offer acknowledgement of their large share in whatever success we may have obtained.

References.

[1] Eagleton and Baxter, "The Virulence of Diphtheria-like Organisms," British Medical Journal, May 28th, 1921. [2] Nuttall and Graham Smith, *The Bacteriology of Diphtheria*, Cambridge, 1903, pp. 160-161, 194, 185, and 200. [3] Ledingham and Arkwright, *The Carrier Problem in Infectious Diseases*, 1912, chap. iv. (Summaries of the work done up to that date and full references.)

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

AN EMERGENCY METHOD IN PRESBYOPIA AND HYPERMETROPIA.

The following cases are recorded as examples of the use of the stenopaic disc in presbyopia and hypermetropia:

Case 1.—Aged 58. Vision: R. = J. 6; L. = J. 6. With disc, R. = J. 1; L. = J. 1.

Case 2.—Aged 61. Hypermetropic, wearing for distance + 4.5 D. sphere in each eye. Vision: R. = 6/60; L. = 4/60. With distant glasses, R. = 6/12; L. = 6/12 partly. With disc only, R. = 6/9 partly; L. = 6/12 partly. Without disc, R. = J. 18; L. = J. 16. With disc only, R. = J. 10; L. = J. 6. With disc and correcting lens for distance, R. = J. 1; L. = J. 1. Retinoscopy revealed astigmatism in the left eye.

Case 3.—Aged 47. Vision: R. = 6/6 H.M., with + 1.0 D. sphere, R. = 6/6; L. = 6/6 H.M., with + 1.0 D. sphere, L. = 6/6. Without disc, R. = J. 2 with some difficulty; L. = J. 2 with some difficulty. With disc only, R. = J. 1; L. = J. 1.

We have thus a simple substitute, in emergency, for the reading glasses of presbyopes.

The presbyope, even an early presbyope, without the suitable lens, is in a most helpless condition when trying to decipher the small print of a telephone directory, time table, newspaper, exhibition catalogue, etc. This small print is easily, though slowly, read by means of an improvised stenopaic disc, which can quickly be made with a piece of paper or cardboard, through which a hole 1 to 2 mm. in diameter is pierced by a pin, the point of a pencil, or knife. Such an emergency measure would be of real benefit to the presbyope, stranded without reading glasses, specially in the country or on a railway journey. A hole, about the same size, through a piece of bread forms an excellent emergency substitute for a convex lens! The tunnel formed by the fingers and palm of a partially closed fist acts in the same way, though not so clearly.

The reading distance is also much decreased. Case 3 could read J. 1 at 16 cm. with a disc; J. 2 at 29 cm. without a disc.

For distant vision in hypermetropia this emergency method would probably not be of so much practical use, though, as shown in Case 2, the distant vision is much improved.

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A CASE OF FULL TERM ECTOPIC GESTATION WITH LIVING FOETUS.

I THINK there are few cases on record in which a living foetus at full term has been extracted from an ectopic sac, as in the following case:

A woman, aged 30, married nine years, who had had one full-term child eight years ago, gave a history of pelvic pain when she had missed two periods, and there was also a small amount of loss of blood per vaginam. She took no notice of this, and did not complain of anything until she had missed six periods, when she suffered from partial retention of urine. Rest and catheterization on one or two occasions soon resulted in the normal passage of urine. At this time there was a soft swelling in the middle line extending a little above the umbilicus. This seemed to be an intrauterine pregnancy. Behind the uterus was an ill-defined swelling, which was thought to be an adherent fibroid or ovarian tumour. With this diagnosis the patient was allowed to go to term with a view to Caesarean section.

At term the abdomen showed a soft, uniform swelling which was in no way different from a normal intrauterine pregnancy at term. The foetal parts could be felt, and the heart was heard beating strongly in the left iliac fossa. What appeared to be the foetal head was fixed and well down in the pelvic cavity. On vaginal examination there was a hard fixed mass lying low in Douglas's pouch with the cervix high up in front. As this appeared to be the foetal head and no other tumour could be made out I thought we had to deal with an ectopic gestation and not with an intrauterine pregnancy with a tumour behind. I decided to open the abdomen and attempt to extract a living foetus.

On opening the abdomen a soft surface, like an ordinary pregnant uterus, was found, but while there was plenty of room in front, above, and to each side, the large and small intestine were firmly adherent. I decided to go through the anterior wall of the sac, and at once found that the incision had gone through a very thinned-out anterior wall of the uterus, which covered and was implanted into the anterior wall of the sac. There was no other way to the foetus except through the posterior wall of the uterus. This was cut through and the placenta found lying in front of the baby. The baby was delivered quickly and the placenta, which was very adherent to the sac, was removed piece by piece. At this stage the haemorrhage was most alarming. The cut edges of the anterior uterine wall, which formed the anterior wall of the sac, were quickly sutured to the lower part of the abdominal incision and the sac was packed firmly with gauze strips. This controlled the haemorrhage.

The patient, after a somewhat stormy convalescence, made a good recovery. The baby, pink and healthy, weighed 7½ lb.; its trunk was well formed; the head was anvil-shaped from prolonged pressure and both lower limbs were greatly deformed. There was no liquor amnii in the sac of the ectopic gestation. The baby died about thirty hours after delivery.

My experience in this case has led to the following conclusions:

1. The diagnosis between an intrauterine pregnancy complicated with a tumour and an ectopic gestation at term is often very difficult, and such cases are rarely seen at this stage.

2. If diagnosed, the question of saving the foetal life should be neglected. The foetus will most likely be deformed, and the haemorrhage from the living ectopic placenta is extremely alarming.

3. The patient should therefore be allowed to go through the spurious labour (when the foetus dies), and the operation should take place about three weeks later, when the dangers of haemorrhage will be much less.

As far as could be ascertained, the ectopic pregnancy had begun in the left tube, and the slight bleeding from the uterus in the early history of the pregnancy no doubt denoted a threatened rupture.

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RESUSCITATION AFTER APPARENT DEATH.

IN view of the opinions held about the cessation of function of the brain cells after stoppage of the circulation, I beg to report the following case:

On December 7th, 1921, I performed double middle turbinectomy on an apparently healthy woman aged 38 years. The following notes are copied from her case sheet, which was entered up at once, the times and statements being the common agreement of several observers.

6.5 p.m.: The patient left the theatre in a perfectly satisfactory condition, in very light anaesthesia, as she had only been under the anaesthetic for five or six minutes, and she had had scarcely any haemorrhage. She was put to bed in the ward, and at 6.15 p.m. it was noticed that she had stopped breathing and had no pulse. I received a request in the theatre to go to the ward at once. I was just completing the succeeding operation, and went to the ward immediately it was finished.

I found the patient ashen and pulseless. There was no heart beat to be heard on auscultation. Artificial respiration had been in progress and oxygen had been administered since 6.15 p.m.; these measures were continued whilst preparations were made for heart massage.

At 6.25 p.m. an incision was made along the left costal margin; the heart was found to be stopped in diastole. Bimanual massage was applied through the diaphragm, whilst another house-surgeon applied Schafer's method of artificial respiration. The foot of the bed was raised on to chairs, the legs bandaged tightly from below upwards, hot bottles placed around the patient, and pressure applied to the splanchnic plexus. At 6.40 p.m. the heart was still inert, so 1 c.cm. of adrenaline was injected direct into the left ventricle. At 6.42 p.m. the heart began to beat. At 6.45 p.m. the radial pulse was felt, and at this point digitalin gr. 1/100 and strychnine gr. 1/60 were injected into the median basilic vein. By 7 p.m. the heart was beating strongly, but there was no respiratory effort, in spite of continuous artificial respiration and massage to the heart in order to assist its efforts, so 1 c.cm. pituitrin and 1 c.cm. adrenaline were injected into the left ventricle.

In spite of continual heart massage and artificial respiration there was at 7.25 p.m. still no effort to breathe. The pulse was good, the rate 100 a minute. As the other house-surgeon, the anaesthetist, and myself were unable to carry on any longer, two more house-surgeons took our places. At 7.50 p.m. the heart was beating strongly, but there was no respiratory effort. The house-physician and a dresser were now assisting by doing artificial respiration alternately. At 8 p.m. the patient made a voluntary inspiration, and one minute later made voluntary inspiratory and expiratory efforts. At 8.5 p.m. she was breathing well, the pulse rate was 90 to 100, respirations 24. She moved her position in the bed, rolled her head, moved her eyelids and eyes; she retched but did not vomit, and the pupil reflexes were present. The incision was stitched up, hot saline having been run into the abdomen, and a tube placed in the left kidney pouch. At 9.10 p.m. the pulse was scarcely perceptible; 1 c.cm. pituitrin and 1 c.cm. adrenaline were given direct into the left ventricle, and also hot saline and 1 oz. brandy per rectum. A moment after the heart became weaker, and before the intra-ventricular injection was given, the breathing became more feeble, so artificial respiration was restarted. At 9.12 p.m. the patient had a good pulse and was breathing normally. At 9.20 p.m. heart and respiration both stopped at the same time. Digitalin gr. 1/100 and strychnine gr. 1/60 were given into a prominent vein over the anterior part of the left deltoid, and 1 c.cm. pituitrin and 1 c.cm. adrenaline into the left ventricle. Artificial respiration was again begun. At 9.25 p.m. 1 c.cm. ether was given into the left ventricle and continuous artificial respiration carried on. At 9.40 p.m., however, all attempts at resuscitation were reluctantly given up.

In spite of the fact that apparently the patient "lived" for 1 hour 20 minutes it will be noted that the heart was stopped for 27 minutes, so far as its own efforts were concerned, and that it was completely inert for 10 to 12 minutes before massage was begun. When further endeavour was decided to be useless the first question which arose in one's mind was whether the patient was dead all the time, and the actions which were aroused were merely on a par with a physiological experiment. I am indebted to Mr. A. L. Macleod, honorary aural surgeon to this infirmary, for permission to publish this case.

GILBERT R. A. ARMSTRONG, M.B., Ch.B.Edin.,
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FRACTURE OF THE TERMINAL PHALANX OF A FINGER WITH RUPTURE OF THE COMMON EXTENSOR TENDON.

THE case reported by Dr. J. N. Laird (p. 101) is interesting to me, for I had the misfortune to experience a similar injury to my right ring finger while playing football in 1913. The shot was very forceful and at close range to the goal. The chip of bone from the dorsal aspect of the base of the terminal phalanx seems to have been larger in my case. Treatment by hyperextension was tried for fourteen days, but without success.

Sir J. O. Skevington, Windsor, kindly agreed to operate. He made a horseshoe skin flap (base proximal) over the joint and took a "tuck" in the dorsal tendon expansion, which was sutured with catgut. The skin was then stitched back in position. The finger was splinted for fourteen days. The result is excellent, both functionally and aesthetically. Only with difficulty can the line of incision now be demonstrated.

It may be worthy of mention that the pain experienced after operation was considerable, presumably due to effusion under the unyielding tendon. It was relieved by morphine.

London, W. CECIL BURNHAM, M.B., Ch.B., F.R.C.S.E.

Reports of Societies.

PROOF OF LIVE BIRTH IN CRIMINAL CASES.

AT a meeting of the Medico-Legal Society on January 17th, the President, the Right Hon. Lord Justice ATKIN, being in the chair, Professor HARVEY LITTLEJOHN read a paper entitled the proof of live birth in criminal cases.

The crime of infanticide, he said, had from time immemorial been common, and on this account, as well as from the difficulties of proof and special circumstances associated with it, had given rise to a vast amount of literature and attracted the attention of medical jurists in all civilized countries. The chief difficulty encountered in proving infanticide arose from the fact that before the charge of causing its death could be preferred the law demanded evidence that the child had been "born alive"—that is, had had an existence when completely outside the body of its mother. In Germany and certain other countries proof of life at the time of birth only was required, since the crime consisted in causing death during or after birth, and the birth was held to have commenced whenever the presenting part became engaged in the pelvis as a result of labour pains. In this country the essential test of life demanded was the occurrence of respiration, and it was generally held that it was not possible to affirm positively that respiration—even full respiration—did not occur before complete expulsion of the child's body.

Importance of Thorough Post-Mortem Examination.

In Professor Littlejohn's opinion, however, the difficulty arising from the above-mentioned cause had been exaggerated, and this he considered was to a large extent due to faulty teaching, and to statements in the textbooks, which did not lay sufficient stress on the significance of full respiration, and unduly emphasized the fallacies said to underlie the hydrostatic test. In his opinion a careful *post-mortem* examination should, in most cases, enable a definite opinion to be given as to whether or not the child had been born alive. It was desirable, however, wherever possible, to have these *post-mortem* examinations performed only by persons with large experience in dealing with such cases. In commencing the necropsy he considered it to be a good practice to examine the head first, as this afforded an opportunity of noting the condition of the contents of the skull before the blood drained away during the examination of the trunk, and also because it enabled the appearances in the lungs to be better interpreted when they came to be examined. It was specially important to note the presence of injuries such as fractures of the skull, the site and extent of the caput succedaneum, the amount of head moulding, and the presence of intermeningeal haemorrhage. Many infants, even of ordinary development, whose mothers had normal pelvides, suffered from very considerable compression of the head during birth, with the result that they were born dead. From such observations we might, even in an infant which showed evidence of air in its lungs, be able to affirm the extreme likelihood of a natural cause of death during or immediately after birth. The air passages should next be examined, the mouth being explored for any obstruction or wounds, such as might be produced by the insertion of the fingers into it. The tongue, together with the pharynx, should be carefully dissected out and the entrance to the larynx exposed to view. Great care must be taken in doing this not to interfere with any mass of mucus or other foreign matter which might be resting over the entrance to the larynx. One of the most frequent causes of death during birth was the accidental obstruction of the air passages by mucus sucked into the mouth during labour owing to premature efforts at respiration. The windpipe was next ligatured about halfway between the larynx and bifurcation of the trachea and divided; the contents of the thorax were then removed *en masse* after placing a ligature around the oesophagus immediately above the diaphragm. Next the lungs were examined as to physical condition, volume, crepitation, colour, marbling of surface, and, above all, for the presence of the fine mosaic of expanded air vesicles on the surface, which was absolutely characteristic of the presence of air either respired or artificially introduced. The trachea and bronchi were examined by the naked eye for foreign matter, and some of the contents were submitted to microscopic examination. The presence of blood, lanugo hairs, meconium, particles of vernix caseosa, indicated respiratory action during birth, and might supply a satisfactory cause of death. The hydrostatic test should be performed, but it merely confirmed the conclusion which any experienced examiner would have already drawn from his observations. Valuable corroboration of respiration was afforded by the presence of air in the stomach and intestines. Observations tended to show that the longer an infant lived the further the air extended down the intestines, and air in the duodenum and intestines was not only confirmation of respiration but also of the respiration having lasted for some time. If air were insufflated into the lungs of a dead child some entered the stomach but did not pass into the duodenum.

Possible Fallacies in Interpreting Appearances in the Lungs.

Two fallacies were frequently mentioned as attending the interpretation of the appearances in the lungs: (1) That the lungs might have been artificially inflated; (2) that putrefaction might be the cause of the condition. With reference to artificial inflation, while this was a valid object in a general sense, it had no importance in criminal cases in which births took place in secret and unassisted, because if the child was dead or stillborn, the mother was the last person to try to resuscitate it, even presuming that she knew how to do this. Even if the possibility were admitted, the *post-mortem* examination would disclose the true cause of death and prevent any miscarriage of justice occurring.

The objection that the appearances might be due to putrefaction was equally invalid in a case likely to lead to a criminal charge. The lungs of an infant, to all appearances fresh or only showing signs of early putrefaction, would emphatically not float in water from the presence of gases of putrefaction. The lungs of newly born infants which had not respired, and accordingly contained no organisms, resisted putrefaction to a greater degree than most of the other internal organs, and even when decomposition was advanced in the rest of the body the lungs were practically unaffected. The presence of early decomposition which might sometimes occur when a child had inspired decomposing matter at or after birth practically indicated respiration and consequent introduction of organisms. But in such cases no doubts could arise as to the respective parts played by respiration and putrefaction in causing flotation.

The Significance of Respiration.

Did the fact of a child having respired enable us to affirm that it was born alive? This was the great difficulty in connexion with medical evidence in cases of infanticide. The circumstances under which respiration could take place during the passage of the child into the world were (1) vagitus uterinus; (2) vagitus vaginalis; and (3) breathing after the birth of the head but while the rest of the body was still in the maternal passages. All authorities were agreed that the first two could only occur when there had been introduction of the hand into the maternal passages during labour or in instrumental deliveries—that is, in assisted births, which were of course very unlikely to be the subject of criminal charges. These conditions accordingly had no importance with reference to the question under discussion. The possibility of respiration occurring after the birth of the head and before complete extrusion of the body was readily to be admitted, but Professor Littlejohn submitted that in this short period, while the chest and shoulders of the child were still firmly compressed by the maternal passages, any respiratory effort must be cramped and could lead only to incomplete expansion of the chest and to partial filling of the lungs with air. He was of opinion accordingly that full expansion of the lungs with air could only take place after the body was wholly outside the mother, and that this condition was therefore proof of "live birth." He would go further and hold that expansion of the greater part of both lungs in a healthy child entitled the observer to come to a similar conclusion. No injustice was done to the mother by such an opinion, because the cause of death always afforded a means of control. If in a child with partial expansion of the lungs there was sufficient natural cause of death, such as mucus obstructing the larynx, or intermeningeal haemorrhage and evidence of compression of the brain, then the cause of death was explained. It was the presence or absence of a natural cause of death, together with the fact that from the evidence of respiration the infant was living at the time of birth, that should guide the medical man in forming his opinion. If there were injuries to the child, and these

appeared to have been caused during labour or were consistent with attempted self-delivery, it had to be admitted that the child with only partially expanded lungs might not have been born alive, and the mother must get the benefit of the doubt. If, on the other hand, the injuries were not to be explained by an unintentional act, and there was no natural cause of death, it was surely difficult to avoid the conclusion that the child was born alive.

In conclusion, Professor Littlejohn emphasized his opinion that respiration complete or involving the greater part of both lungs was positive proof of live birth in the legal sense, and he was unable to agree with the statement in Taylor's *Principles and Practice of Medical Jurisprudence*, edited by the late Dr. F. J. Smith, that "for respiration, however complete or incomplete, to be considered proof of live birth, an eyewitness to those respirations is essential."

The paper was discussed by the PRESIDENT of the Society, Sir WILLIAM WILLCOX, Dr. AITCHISON ROBERTSON, Dr. SPILSBURY, Dr. BREND, and others.

RELATIONS BETWEEN VEGETABLE AND HUMAN PATHOLOGY.

AT the meeting of the Royal Society of Tropical Medicine and Hygiene on January 19th Sir JAMES CANTLIE, who presided, said that the society that evening was venturing into a province which it had not touched before—namely, the comparative study of plant disease and human disease—but even a knowledge of botany had its value to the worker in tropical medicine.

Dr. E. J. BUTLER, Director of the Imperial Bureau of Mycology, then read a paper on relations between vegetable and human pathology. He said that the directions in which the older pathology might learn something from the study of certain disease phenomena in plants were to be sought in certain branches of cellular pathology, in the diseases involving changes in physiological processes, such as altered metabolism, in certain classes of parasitic and virus diseases, and in the effect of environmental conditions on the interaction of host and parasite. He spoke first of tumour formation in plants, as illustrated in the well-known crown gall tumour caused by *Bacterium tumefaciens*. Most of the tumours were of the ordinary connective tissue cell type, and were the nearest approach that one could expect to get in plants to sarcomata, but in a few cases the tumour appeared to be composed mainly of epidermal elements, and these might be compared with epitheliomata. Secondary tumours frequently developed by a definite outgrowth from the primary of a tumour strand of infected cells. The organism could be isolated and cultivated.

Of the virus or contagium diseases, as plant pathologists called them, the most important was the mosaic group, so called because the most obvious symptom was the variegated effect of light and dark green patches on the leaves. These diseases were constitutional, the virus reaching all parts of the plant within a few days, three or four in the case of the mosaic of cucumber. Carriers had been found—that is to say, plants which showed no symptoms after inoculation, yet contained the infective virus in transmissible form. The disease was not usually fatal to annual plants, though death from weakness might occur. Mosaic and allied diseases of potato in England might cause a reduction of over 50 per cent. in the yield. So far as was known these virus diseases were insect-borne, chiefly by means of sucking insects. In no case had transmission by mere contact been demonstrated. The life of the virus varied from twenty-four hours (sometimes in cucumber mosaic) to a year or more (tobacco mosaic if dried). The lecturer said that there were a few vegetable pathologists who preferred the enzymic or toxic hypothesis to the parasitic explanation of these diseases, but most agreed that their study had made it necessary to assume that they were caused by ultramicroscopic living organisms.

In conclusion he dealt with the set of problems arising from geographical and seasonal distribution of certain diseases. It had been found possible to correlate the geographical distribution of a considerable group of plant diseases with the temperature and humidity reactions of the parasite and its host. In the simplest cases a single factor, like the degree of relative humidity of the air, acted by limiting the development of the parasite. The meteorological factor might also act by affecting the receptivity of the host plant. Thus, in the vine mildew infection was dependent on the condition of the stomata through which the parasite entered. But in many cases the action of the morphological factors on both parasite and host in their mutual relations—the host-parasite complex—had to be taken into account.

Dr. ANDREW BALFOUR raised the question of alkaloid production by certain trees, and the possibility that this might be a protective mechanism against insects. In the trees of the genus Cinchona, for example, quinine and other bitter alkaloids were produced, and it would be interesting to know whether plants which produced alkaloids were proof against insect-borne disease. Gum production might also have a protective action like that of the scab which formed over a wound. He believed that an organism from the gum of two species of acacia had been isolated, and on cultivation in a liquid medium containing levulose among other constituents, the organism produced at first slime and eventually gum.

Dr. BUTLER said that work had been done in France on a group of alkaloid-producing plants in order to study the effect of alkaloids such as nicotine on certain of the more common plant parasites. A great many plants did successfully resist parasitic invasion because they had an alkaloid, but whether this was a definite protective reaction one could not say. Gum production had been shown to be due to bacteria in a number of cases; but in the plum and peach of Europe a parasite had not been detected, and production seemed to be due to a degeneration of the cell wall, favoured by atmospheric influences, especially by rapid alternations of humidity and dryness. He added, in reply to another question, that among plants nothing similar to antibodies had been found.

Ear Disease in the Tropics.

Dr. SALISBURY-SHARPE read a paper on disease of the ear in relation to life in the tropics, particularly with regard to the ear tests which should be required of candidates for tropical service. The prospects of cure of ear disease in the tropics were not good in most cases, especially in those localities where the proportion of water vapour in the atmosphere was high. In the tropics persons liable to wax accumulations suffered more from this trouble than in temperate countries. Middle-ear suppuration also was more troublesome and dangerous in the tropics. One great cause of chronicity in these cases was a secondary infection from outside, and this was apt to be more complicated and virulent in the tropics than in other climates. Residents in the tropics were also liable to deafness from malaria and other fevers. True malarial deafness in its early stages was wholly or partially amenable to quinine. Malaria might also cause intermittent attacks of intense earache, a true otalgia. He had seen many cases of suppurative disease of the middle ear the origin of which was said to have been an attack of malaria, though he was sceptical as to the possibility of this disease originating *de novo* in that way. Ménière's disease might occur through considerable exposure to the hot sun. In Japanese river fever deafness was often a marked feature.

ELECTRICAL TREATMENT IN GYNAECOLOGY.

AT a meeting of the Electro-Therapeutics Section of the Royal Society of Medicine on January 20th, Dr. E. P. CUMBERBATCH presiding, Dr. A. ZIMMERN, electrologist of the Salpêtrière Hospital, gave an address on electrical methods in gynaecology.

Dr. ZIMMERN said that in recent years electricity in a good many of its applications had been forsaken in favour of *x* rays, and this was especially the case in gynaecology. It was true that electricity here had not the brilliance of surgery, but its general results, now tested by time, entirely justified its early claims. He knew of cases particularly in which uterine haemorrhages had been controlled by the application of the continuous current when other methods, including *x* rays, had failed. In cases of fibroid the introduction into the uterus of a carbon electrode as the positive pole of the galvanic current, at an intensity of 30 to 50 milliampères for five minutes twice a week, had resulted in the reduction or even the disappearance of the haemorrhage. In metritis, when complicated by menorrhagia or metrorrhagia, his custom again was to use the positive pole of the galvanic current, and this served a double purpose. If the haemorrhage resulted from muscular weakness the current was useful in stimulating the muscle fibres, and if the cause was ulceration the caustic effect of the carbon sound of suitable size was all to the good.

The intensity of current where caustic action was desired must be high; Apostoli used even 100 milliampères or more, but his own experience had shown him that too high intensities caused

pain and disadvantage. The intensity he used was usually somewhere about 40 milliampères, but he could give no exact figure, because it depended on the sensitiveness of the patient. It was a good precaution to begin with relatively weak intensities—20 milliampères—and the principle should be to employ only that current which was what he called *utérinement tolérable*. To obtain a cauterizing action on the uterine cavity the sound must be drawn slowly down during the passage of the current, so that there was action on every part of the walls. Obstinate haemorrhage was in many cases due to a local cause, such as a submucous fibroid, and that was a matter for operation. If, however, the haemorrhage was not the predominant symptom and the metritis was not too recent, the negative current (15 to 20 milliampères) would sometimes give excellent results, as would high frequency (the small spark of the resonator). In subacute or chronic metritis of gonorrhoeal origin he had found silver ionization of value, a silver sound being connected with the positive pole of the continuous current, and not more than 20 milliampères given for five or ten minutes, with two sittings a week to begin with.

He regarded it as an elementary rule that the presence of acute, subacute, and purulent inflammation of the appendages was a contraindication against electricity. In such cases electricity was dangerous. If, again, pyrexia was present, or if it made its appearance after treatment had begun, electricity should be abandoned in favour of more classic methods, for this meant that a subacute salpingitis was not entirely extinguished. But when there was mere congestion of tubes and ovaries, electrical treatment was in no way to be feared.

Dr. Zimmern had employed electrolysis with platinum, silver, or nickel sounds to good effect in stricture of the cervix, and he claimed that this procedure was absolutely without danger in the treatment of any kind of stricture. Its object was, by making use of the resolving properties of the negative pole, to broaden and make more supple the cervical passage.

After the sound was introduced a small intensity of current, up to 6 or 10 milliampères, was applied. In subsequent sittings sounds of larger diameter were employed, so that the narrow canal in time came to admit instruments which could not have been introduced at the first sitting. It was remarkable how easily a sound, negatively charged, might be introduced, when, without the current, the same instrument would have been quite impossible of introduction. Negative electrolysis might also be useful in amenorrhoea and in sterility. In amenorrhoea, when the case appeared very obstinate, his custom was to introduce a galvanic current of 20 milliampères for five minutes twice or three times during the week preceding what might be presumed to be the period. This method, however, need only be resorted to in exceptional cases, and in ordinary amenorrhoea it was sufficient to apply continuous current in the vagina by means of a cotton tampon covering a carbon sound, or perhaps merely to excite the ovaries through the abdominal wall by moistened electrodes, the negative one being placed in front of each in turn, and the positive on the lower part of the back.

Dr. Zimmern touched, in conclusion, upon such conditions as incontinence of urine (where faradic current might give encouraging results, although the treatment required a long time and there was often relapse) and anal fissures, where he had found high frequency, with Oudin's resonator and metal electrodes, of very great use, the treatment nearly always giving him satisfaction, and surpassing in its results any of the surgical measures usually employed.

Dr. C. A. ROBINSON spoke of the value of diathermy in gonococcal infections in women. In the electrical department at St. Bartholomew's, under the superintendence of Dr. Cumberbatch, twelve cases of cervicitis and urethritis with gonorrhoea had been treated by diathermy, and in every case except one—which was an undoubted case of reinfection—a positive diagnosis had given place to a negative. One of the cases had been followed up for a year, and others for shorter periods, and the results appeared to be permanent. He believed that the lethal temperature for the gonococcus was easily attained by diathermic methods.

Dr. AGNES SAVILL gave an account of some cases of uterine haemorrhage treated by electrical ionization. She preferred not to undertake such cases until she had had an opinion from a gynaecologist. She used a zinc positive electrode, or, in very severe cases, a copper one. The drawback to copper was that it adhered so firmly to the membrane lining the womb that the current had to be reversed before the sound could be withdrawn. She had originally employed a curved sound, but found its insertion very difficult; a straight sound was easier, and the patients did not have so much pain. Latterly, on Dr. Zimmern's suggestion, she had given larger doses than the cautious ones with which she began, and had even gone up to 30 or 40 milliampères, and the results appeared to be obtained more quickly, though the discharge a day or two afterwards was increased.

One of her cases was a woman, aged 23, whose periods had never been regular and the discharge always diffuse. She had been curetted more than once, and after each operation had had amenorrhoea, but the moment the periods restarted the diffuse bleeding recurred, and went on for months. She was brought to the speaker as a last resort to avoid hysterectomy. Copper ionization was given, and a current of 20 milliampères applied for twenty minutes on eleven occasions. The womb then had become nearly normal in size, and the patient so much improved as to be able to earn her living.

Mrs. Savill described other successful cases and one failure.

Dr. SLOAN CHESSER demonstrated the apparatus she commonly employed for endocervicitis and similar conditions. She used a zinc electrode for acute cases, and a copper one for others, customarily giving 20 milliampères for twenty minutes, and on reversing the current for three minutes there was no difficulty in withdrawing the sound. The number of treatments necessary was somewhere between six and twelve. She also exhibited an arrangement for applying faradic current in bladder conditions. The speaker referred to the value of the static wave in dysmenorrhoea and amenorrhoea; the technique of application was advantageous, especially in the case of unmarried women.

Dr. W. J. TURRELL spoke of the value of diathermy in the treatment of amenorrhoea and dysmenorrhoea. In the former condition an increased nutritional effect was desired, and therefore the current should be administered for a relatively long period and at a low intensity. In dysmenorrhoea the object was to induce relaxation of spasm, and hence a stronger current for a shorter time was indicated. It would be absurd to maintain that electrical treatment was the method of choice in all amenorrhoea, but he thought diathermy was rational in those well-known cases in which, owing to overwork, the nutritional forces had been diverted and an amenorrhoea set up.

Dr. A. LAPTHORN SMITH said that many years ago, when there was a high mortality from the surgical treatment for fibroid, he adopted electrical methods and found them very successful. Out of 108 cases of fibroid tumour treated by electricity, 103 were symptomatically cured—that is to say, the principal symptom, menorrhagia, was cured in all of them—and the tumour in all cases shrank very much. With the improvements in surgical technique, which practically reduced mortality to vanishing point, he abandoned electricity in favour of operation. He did so because electricity in comparison was so slow and took up such a great amount of time. In dysmenorrhoea he had found electrical methods always satisfactory, and in amenorrhoea it was not to be doubted that the galvanic current supplied something that was lacking to the trophic nerve. He had found electricity useful also in cases of sterility.

Dr. JOHN ELLISON urged that before electrical treatment was undertaken for conditions diagnosed as endometritis and cervicitis it should be made certain that there was no malignant disease present. Malignant changes sometimes took place in fibroids, and he did not know whether electricity had any effect there, but he thought there was a certain amount of risk unless malignancy was definitely excluded.

Dr. G. B. BATTEN said that his own experience bore out the lecturer's opinion with regard to the considerable value of high frequency in fissures and haemorrhoids.

The members of the Section, on the proposition of Dr. TURRELL, expressed their thanks to their French confrère.

LOCAL RESULTS OF DENTAL INFECTION.

THE second Hunterian Lecture of the session was delivered before the Hunterian Society on January 11th by Mr. W. G. SPENCER, F.R.C.S., who took for his subject, "Some local results of dental infection." Mr. RUSSELL HOWARD (President of the Society), was in the chair. Mr. Spencer's lecture is printed in full at p. 131.

Sir JAMES DUNDAS-GRANT recalled some interesting cases from his own experience. One was an abscess in the parotid gland, which, on looking into the mouth, he found to be due to a feather, evidently from a pillow, which was projecting out of the orifice of the duct. Frequently he had had cases of haemoptysis brought to him, and was unable to find any cause for this condition in the chest or upper passages. He had then noticed a tooth with a polypus, and on inquiry had discovered that the patient had blood in his mouth on waking in the morning, having evidently sucked the blood from the polypus just before waking. He agreed that the incisors might be very influential in producing mischief. One reason why the pyorrhoea connected with them was so difficult to

deal with was because these were the teeth of all others most under the influence of the tongue, which kept pressing upon them and making them rock, so that the sacs around them were opening and closing with great frequency.

Dr. JOHN ADAMS referred to the relative immunity of women from cancer of the tongue. He thought it a pity to remove the lower incisors, which were the most durable of all the teeth.

Mr. SPENCER, in reply to a remark by the PRESIDENT, said that he agreed with those dental surgeons who thought that plates should never be fixed; and yet it was wonderful what fixed plates were put in, especially in the case of persons who had been fitted in America, and how they got on without complications he did not know. With regard to the advisability of removing the incisors, it was true that often there was only a small amount of pyorrhoea alveolaris connected with them, but they were an infective focus, and therefore it was risky to make a raw surface in their neighbourhood. Cancer of the tongue was certainly less frequent in women than in men, but it was not very rare; he thought it possible that 30 per cent. of the cases were in women.

SPASMODIC STRICTURE OF THE UTERUS.

A MEETING of the North of England Obstetrical and Gynaecological Society was held at Leeds on December 16th, the President, Mr. CARLTON OLDFIELD, in the chair. An adjourned discussion took place on Mrs. Dobbin Crawford's paper on spasmodic stricture of the uterus, read at the November meeting of the society, and printed in this week's JOURNAL at p. 135. In her original paper Mrs. Crawford related a case recently under her care, and urged the adoption of the term "spasmodic stricture" as being simpler than "hour-glass contraction" and a more accurate description of the condition. The correct treatment was deep surgical anaesthesia, and this would be found successful in all but a few obstinate cases for which Caesarean section might still be required.

Mr. MILES PHILLIPS (Sheffield) agreed that prolonged surgical anaesthesia was of the greatest value in these cases. Dr. FLETCHER SHAW (Manchester) mentioned that Clifford White had recommended prolonged traction by means of a weight attached to the presenting part. Dr. MACGREGOR YOUNG, speaking from the anaesthetist's point of view, did not think that any depth of anaesthesia would sufficiently relax the uterine muscle.

Dr. T. G. STEVENS (London), invited to take part in the discussion, strongly opposed the adoption of any new name for the condition, and thought the best treatment was to leave such cases alone. Dr. DOBBIN CRAWFORD briefly replied.

Specimens and Cases.

Miss IVENS (Liverpool) showed a specimen of primary carcinoma of the Fallopian tube.

Dr. J. W. BRIDE (Manchester) showed specimens recently removed from a case of ectopic pregnancy. The left tube contained a gestation sac which had ruptured and given rise to the symptoms demanding operation. The uterus was bicornuate, the right horn being rudimentary but enlarged at its distal end, and very like a subperitoneal fibroid in appearance. This horn was removed, and on examination was found to contain a lithopaedion. Dr. Bride also read notes of a case where two ectopic pregnancies had occurred in the same patient within a period of two years.

Dr. CROFT (Leeds) related a case of full-term ectopic pregnancy for which he had recently performed abdominal section. The breech of the child lay in the pouch of Douglas, and the placental site was over the left iliac vessels and ureter. The child, which weighed 4½ lb., was delivered alive, and lived a week. The placenta was not removed, but the amniotic sac stitched to the abdominal wound and a tube inserted into it. The patient was still in hospital, but the wound was now almost healed. No pyrexia followed the operation.

OBSTETRICS AND GYNAECOLOGY.

A MEETING of the Midland Obstetrical and Gynaecological Society was held at the Medical Institute, Birmingham, on January 3rd, with the President, Professor EWEN MACLEAN, in the chair.

Mr. FURNEAUX JORDAN showed a specimen of myxosarcoma of the Fallopian tube. The specimen, which showed a growth in the left cornu of the uterus and in the left tube, was from a multipara, aged 47, giving a history of twelve months' menorrhagia. At the operation numerous secondary deposits in the pelvis were found, and hysterectomy was performed solely for the arrest of haemorrhage. In connexion with this case Mr. Jordan reported the case of a schoolgirl, aged 16, in whom the sudden onset of profuse haemorrhage was accompanied by the appearance of a tumour at the vulva. The tumour was removed by the practitioner in attendance by ligation of its pedicle. Six weeks later haemorrhage recurred, and the vagina was found to be again filled with soft friable growth. This was found to be a sarcoma botryoides, and total hysterectomy was performed.

Mr. Jordan also showed a specimen of parovarian cyst complicating pregnancy. The patient, a primigravida eight months pregnant, was found to have a large cyst in the pouch of Douglas. Caesarean section at term was advised and performed, when the tumour was found to be a pedunculated parovarian cyst. Removal of the cyst at the time of its discovery was contraindicated by the undesirability of exposing the woman to labour with a newly healed scar, and tapping of the cyst at the onset of labour contraindicated by the marked preponderance of dermoids amongst cysts of this class. Mr. Jordan also reported the case of a woman, four months pregnant, with similar symptoms to the last in whom a solid tumour was felt in the pouch. The tumour, which was a fibromyoma growing in the posterior wall of the uterus, was removed by myomectomy, and the pregnancy continued uneventfully.

Dr. H. SHUFFLEBOTHAM showed a large teratoma of the ovary removed from a woman aged 34. The tumour presented as a nodular mass, filling the pelvis, and extending upwards to the umbilicus. On opening the abdomen the mass was found fixed to the back of the uterus, and many intestinal and omental adhesions were present. The tumour, which was solid, contained isolated cysts and some bone. Histologically, elements of all the layers of the trilaminar blastoderm were represented. There was no evidence of malignancy. Dr. Shufflebotham also showed a large pedunculated fibromyoma removed from a patient, aged 50, who gave a history of pain and constipation of three weeks' duration. A central tumour, extending to just above the umbilicus, was present. At laparotomy the tumour was found to be a large fibroid originating from the right cornu of the uterus, and having three complete twists in the pedicle.

Dr. W. A. POTTS read a short paper on psychotherapy in relation to obstetrics and gynaecology. Having generally reviewed the respective places of hypnosis, suggestion, and analysis in psychotherapy, he went on to show how and when these might be used in the treatment of certain obstetrical and gynaecological disorders. In particular, he thought psychotherapy of use in the treatment of labour, and of menstrual disorders associated with pain, by removing or lessening the unreasoning dread of the unknown, experienced in greater or less degree by most women.

THE West Kent Medico-Chirurgical Society held a clinical evening at the Miller Hospital, Greenwich, on January 13th, when Mr. WILLMOTT EVANS showed a case of multiple exostoses in a dwarf man; the condition was familial, his father, brother, half-sister, and sister's children suffering similarly. Mr. C. A. JOLL showed a young woman from whom he had removed the right clavicle containing a hard nodule which showed egg-shell crackling. He also showed a man, aged 43, with Pott's disease of the spine, treated with a bone graft from the tibia. Dr. HAROLD PRITCHARD showed a child which developed hard nodes on one fibula and one tibia after acute septic meningitis. He also described the treatment of a case of pernicious anaemia treated by intramuscular injections of collosol manganese. Dr. BOWEN WILLIAMS showed a man operated on by Mr. H. Davis for stricture of stomach due to swallowing sulphuric acid. Dr. JAMESON showed a case of ulcer of the tongue with acid dyspepsia; a case was also shown of head injury, who developed spastic paralysis of the legs six years later, which was relieved by a decompression operation.

THE Ambassador of the United States to France has presented Professor Bergonié with the medal and diploma of the Franklin Institute of Philadelphia in recognition of his services to science, and more particularly for his apparatus employing electricity in the search for, and extraction of, fragments of projectiles.

Reviews.

THE ANATOMY OF THE ORBIT.

IN his monograph *The Anatomy of the Human Orbit and Accessory Organs of Vision*[1] Professor S. E. WHITNALL of McGill University has provided the ophthalmologist and rhinologist with a most extensive and elaborate account of the details of structure and development of that part of the body of chief interest to them. The book represents in an amplified form the substance of a series of lectures delivered to candidates for the Oxford diploma in ophthalmology. The work is so complete in every other respect that it seems almost a pity that the author has not included an account of the gross and minute structure and development of the globe, but other parts are so fully described, together with the results of several original investigations, that the work becomes of real value and interest to the anatomist.

The text is divided into four parts. Part I is devoted to osteology, and includes a very clear account of the air sinuses and an important section on the growth and variation in shape of the orbit. Part II deals in minute detail with the eyebrows, eyelids, conjunctiva, and lacrymal apparatus. Part III is concerned chiefly with a description of the ocular muscles, including a simple yet efficient account of their actions, and with the blood vessels and nerves of the orbit. Part IV consists of a brief sketch of the cerebral connexions of the nerves, and it would appear that this section might be amplified with advantage to the clinician.

A perusal of the monograph is both refreshing and interesting, since it is obviously written with the primary intention of emphasizing all points which may be of real practical service in diagnosis or surgical treatment, yet the more scientific aspect has not been neglected and attention is drawn repeatedly to the limitation of our knowledge on certain points and imagination stimulated by the original manner in which some subjects are presented. Almost all parts are dealt with in an exhaustive manner, but we would mention especially the sections on the fascia of the orbit and the lacrymal apparatus. Professor Whitnall is to be heartily congratulated on the extraordinary amount of detail he has found it possible to introduce without destroying the clearness of presentation and without inducing weariness in the reader.

The text is clearly and freely illustrated, and the majority of the figures are taken from original dissections. An important and useful addition to the monograph consists of a fairly complete list of papers and books, published since 1900, relating to the anatomy, histology, and embryology of the subject. We fear the price may preclude some from purchasing a book which fulfils a long-felt want.

RENAL EFFICIENCY TESTS.

PROFESSOR HUGH MACLEAN'S extensive work during the war, mainly published under the aegis of the Medical Research Council, is well known, and he has now placed the medical profession under an obligation by his clear and skilful presentation of a difficult subject in *Modern Methods in the Diagnosis and Treatment of Renal Disease*.[2] This book, though small in size, contains a great deal of information, more, indeed, than the title alone would lead the reader to suppose, for it deals to some extent with the clinical manifestations of acute and chronic nephritis, and includes some interesting information about war nephritis—a subject on which the author speaks with the highest authority. It is intended for the general practitioner, and accordingly only those tests which are of proved clinical value and can be carried out easily are described. In the simple scheme which Professor Maclean constructed for the examination of renal patients there is only one of the five tests—namely, that for the diastatic activity of the urine—which demands any special apparatus, and this appliance is not complicated—only an incubator or a hot-water bath maintained at a constant temperature of 37° C.

While the great value of the chemical tests of renal efficiency is insisted on, and is emphatically shown in connexion with genito-urinary cases in which an operation under a general anaesthetic may be involved, the importance of careful clinical examination is wisely pointed out. In the critical account of the chief renal functions the excretion of acid products and the subject of acidosis in renal disease are described, the difference between renal and diabetic acidosis being clearly demonstrated. In acute nephritis oedema, hydraemia, and raised arterial blood pressure usually run a parallel course, and as a rule their disappearance is preceded and accompanied by diuresis due to the accumulation of urea in the blood and the returning functional power of the recovering kidneys. Retinal changes in acute nephritis are, Professor Maclean finds, commoner than is generally thought, may clear up, and are without the serious prognostic significance that they have in chronic renal disease.

On the basis of chemical tests cases of chronic nephritis fall into two main groups: The commonest type is the azotaemic, usually spoken of as chronic interstitial nephritis, characterized by retention of nitrogenous products and without any impairment in the excretion of water and common salt; the other, the hydraemic form, generally known as chronic parenchymatous nephritis, is characterized by difficulty in excreting sodium chloride and water and by oedema, but there is no retention of nitrogenous products. Not infrequently, however, the same patient presents the symptoms of both azotaemic and hydraemic disease.

The most important chemical test is the estimation of the non-protein nitrogen—urea, uric acid, creatinin and purin bodies—in the blood, and for this purpose the examination for the amount of urea, a comparatively simple process, is sufficient. This test has great prognostic value; thus, if the blood contains 100 mg. per 100 c.cm., surgical procedures requiring a general anaesthetic—for example, prostatectomy—almost always prove fatal. But a fall in the high blood urea in severe renal disease, such as can be effected by diet, is not necessarily followed by improvement. For cases in which the kidneys are damaged, but not so severely as to lead to an accumulation of urea in the blood, two simple urinary tests are recommended: the author's "urea concentration" test after ingestion of 15 grams of urea, and the diastatic test, a high diastatic value in the urine pointing to renal efficiency. In addition Ambard's coefficient of urea excretion, the phenolsulphonephthalein and other tests are described. The chapter on the relation of nephritis to blood pressure and cardio-vascular changes clearly shows the value of chemical tests in confirming or correcting an otherwise obvious diagnosis of uraemia.

The last chapter, entitled "Some observations on the dietetic treatment of nephritis," recalls the dictum ascribed to a former authority on the subject, to the effect that "the great danger of chronic renal disease is that someone will find it out and treat it," by which was meant the virtual starvation of a milk diet. Professor Maclean carefully points out the limits of protein restriction and insists that the amount of protein prescribed should not be dictated by the degree of albuminuria. In the section on chronic parenchymatous nephritis Epstein's explanation of the beneficial effect of his high protein diet is critically discussed and the diuretic value of urea is shown by examples.

In conclusion, this well-written work, which breathes a spirit of personal investigation and experience, should be in the hands of every medical man who has not already travelled over the voluminous literature of recent years dealing with the modern conceptions of nephritis.

MENTAL DISORDER AND LEGAL RESPONSIBILITY.

Insanity and Mental Deficiency in Relation to Legal Responsibility[3] is a contribution of definite value to psychiatry in its legal aspect, and its author, Dr. WILLIAM G. H. COOK, has rendered a distinct service to the alienist by his concise presentation of an obscure and difficult subject. His research was accepted as a thesis for the degree of Doctor of Laws in the University of London, and its purpose is to summarize and clarify the legal principles relating to the civil responsibility of the insane.

[1] *The Anatomy of the Human Orbit and Accessory Organs of Vision.* By Professor S. E. Whitnall, M.A., M.D., B.Ch.Oxon, M.R.C.S., L.R.C.P.Lond. Oxford Medical Publications: London: Henry Frowde, and Hodder and Stoughton. 1921. (Demy 8vo, pp. 413; 195 figures. 35s. net.)

[2] *Modern Methods in the Diagnosis and Treatment of Renal Disease.* By Hugh Maclean, M.D., D.Sc., Professor of Medicine, University of London, and Director of the Medical Clinic, St. Thomas's Hospital. London: Constable and Co. Ltd. 1921. (Demy 8vo, pp. viii + 162; 4 figures. 8s. 6d.)

[3] *Insanity and Mental Deficiency in Relation to Legal Responsibility: A Study in Psychological Jurisprudence.* By William G. H. Cook, LL.D.Lond. London: George Routledge and Sons, Ltd. New York: E. P. Dutton and Co. 1921. (Demy 8vo, pp. 192. 10s. 6d. net.)

As the author points out, while the law relating to the *criminal* responsibility of lunatics has reached a comparatively advanced stage and definite rules have been laid down for courts when dealing with cases in which the person convicted of crime pleads insanity, no such precision exists in regard to *civil* responsibility. Altogether the law relating to the civil responsibility of lunatics is in an indefinite and unsatisfactory state, and the present volume is the only modern work in which the subject is adequately treated. In successive chapters Dr. Cook deals with mental deficiency—a term here used in its widest sense—in relation to tort, the law of contract, marriage, divorce, and testamentary capacity. The law in respect to these subjects is dealt with historically, and legal decisions in over two hundred important cases are referred to in the text. A full discussion of the law in various countries is included in the various chapters, and the summary given of the laws of ninety-one other countries relating to insanity as a ground for divorce is perhaps of particular value and interest in view of the attempts which are being made to change the English divorce law at the present time. The author's survey makes it clear that the laws of several non-Catholic foreign countries, as well as those of New Zealand and of Western Australia, evince a tendency to regard the contract of marriage as voidable upon proof of the confirmed insanity of one of the parties. One of the most valuable chapters in the book from a purely practical point of view is that concerned with testamentary capacity and insanity. It is in relation to this question that the physician is most likely to be involved in his practice as far as the civil responsibility of a lunatic is concerned, and most practitioners would be well advised to master Dr. Cook's clear and able survey of the attitude of the law towards wills made by those who are subsequently alleged to have been insane.

In concluding this volume Dr. Cook makes some suggestions for the reform of administration relating to lunacy and mental deficiency. His view is that the Board of Control should be made a sub-department of the Ministry of Health, and that it should become the central authority for the care and treatment of all persons of unsound mind. He advocates, moreover, the abolition of the Statutory Committee of county or county borough council set up by the Lunacy Act, 1890, and the transference of all its powers and duties to the central authority. It is difficult to see how the proposed changes would be to the advantage of the institutions concerned. The Central Lunacy Board should certainly retain its control over the medical treatment, discharge and detention of patients, but it is another matter where administration is concerned. The visiting committees are in a position to carry out the business management of the asylums more efficiently and economically than is a Government department, and they constitute furthermore a useful court of appeal for patients in asylums and their relatives. No Government department could be so accessible or so sympathetic as is the elected local representative of the ratepayers.

This book can be unreservedly recommended, and the author is to be congratulated on having filled a gap in the literature of psychiatry.

PATHOLOGY AND TREATMENT OF SYPHILIS.

THE first of two volumes on syphilis in the *Traité de Pathologie Médicale et de Thérapeutique Appliquée*,[4] edited by EMILE SERGENT, L. RIBADEAU-DUMAS, and L. BABONNEIX, deals with generalities and with the disease in the adult; the second with the signs and symptoms it produces in early life.

The account given of the general pathology of the disease is excellent and embodies an adequate summary of animal experiments, and of the application of the results thereby obtained to the treatment of syphilis in man. After a description of the various drugs used in the treatment of the disease and their mode of administration, we find a discussion of the situation with regard to syphilis and marriage. The authors admit that in spite of advances in our scientific knowledge of the disease, rules on the subject of marriage are still lacking in precision and scientific accuracy. A pathological condition of the cerebro-spinal fluid must, they consider, be regarded as an absolute contraindication to marriage. On the other hand, considerable discrimination must be exercised in giving or withholding permission to marry. If too high a standard be set up there is a danger that the medical man will not be consulted.

The chapters containing the discussion of these introductory considerations are followed by others dealing with syphilis of various structures, both visceral and peripheral. Dr. Clement Simon contributes the section on syphilis of the skin, mucous surfaces, and lymphatics. The remarks on skin lesions are well illustrated by photographs. The sections on syphilis of the bones and joints, of the nasopharynx and larynx, and of the respiratory organs and mediastinum, contributed by Rostaine and Bellin and Mirande respectively, are remarkably complete, the subjects being treated in considerable detail. Rostaine contributes the chapters on syphilis of the circulatory and genito-urinary systems, and Babonneix the important section dealing with the nervous system. Altogether the contributors have been well selected, for their names are associated with the subjects on which they write. By the collaboration of these experts a mass of material has been collected between the covers of a single volume and presented in a concise and readable form. The work is in the nature of a general review of the subject of syphilis, whilst at the same time the authors have succeeded in preserving much of the force of an original memoir. It will certainly be useful as a book of reference not only for syphilologists but for specialists in various branches of medicine and surgery. If we have to give expression to any regret it is that there is no bibliography to enable the reader to refer to the original work when desired.

The question of economy has apparently been borne in mind in the production of the volume, otherwise additional illustrations might with advantage have been inserted in several of the sections. We confidently recommend it to all who desire an up-to-date reference work on this subject. We do not know of any other modern book that covers the same ground so successfully.

The second of the two volumes deals with syphilis in early life. It is divided into three parts—on acquired syphilis in infancy, by Dr. P. Fernet; on congenital syphilis in infants, by Dr. Edmond Fournier; and on late congenital syphilis, by Dr. P. Fernet. Nearly four-fifths of the volume is, naturally enough, devoted to the full consideration of ordinary congenital syphilis. After an interesting account of the ways in which syphilis can be acquired in early life, Dr. Fernet discusses the diagnosis between acquired and congenital syphilis; this rests on the absence of certain manifestations, such as coryza, palmar and plantar pemphigus, and pseudo-paralysis, and the presence of a chancre and of more obvious enlargement of the lymphatic glands in the acquired form. The same author's description of late or delayed congenital syphilis owes much to Professor A. Fournier's epoch-making work on this subject, and gives an interesting account of the various dystrophies that may occur and of their relation to the endocrine glands, to which responsibility is unhesitatingly attached. In the treatment of such cases treatment by antisyphilitic drugs should therefore be supplemented by extract of the endocrine gland thought to be affected—for example, of the thyroid in hypothyroidism, and of the testis or ovary in infantilism. Dr. Edmond Fournier's well illustrated description of ordinary congenital syphilis begins with some general remarks on congenital syphilis in the second generation, with a report of a case in the third generation, on the influence of congenital syphilis on the descendants, and on marriage and syphilis. He is fully conscious of, and thus partially disarms, the opposition which his opinion, that a person with syphilis, whether congenital or acquired, should not marry, must arouse. The early manifestations of the congenital disease are fully described, and then a detailed account of the visceral and bony changes given. In the account of the relation of congenital syphilis to rickets it is pointed out that the antagonism excited by Parrot's well-known view—that rickets is a manifestation of luetic infection—has been followed by a counter-reaction, and stress is laid on the special frequency of rickets in the subjects of congenital syphilis and on Kirmisson's arguments in favour of the connexion between these two conditions. In addition to many references to the work of others, Dr. Fournier has brought in many observations of his own, and thus provides the reader with a wide and suggestive monograph on this important subject.

[4] *Traité de Pathologie Médicale et de Thérapeutique Appliquée.* Publié sous la direction de Emile Sergent, L. Ribadeau-Dumas, et L. Babonneix. Tome XIX: *Syphilis; Généralities et Syphilis de l'Adulte.* (Demy 8vo, pp. 608; 109 figures, 1 plate. Fr. 28.) Tome XX: *Syphilis acquise et héréditaire de l'Enfance; Syphilis héréditaire tardive.* (Pp. 279; 65 figures, 8 plates. Fr. 18.) Paris: A. Maloine et Fils. 1921.

EARLY CIRCULATORY DISEASE.

DR. R. MCNAIR WILSON is the author of a volume entitled *The Clinical Study of the Early Symptoms and Treatment of Circulatory Disease in General Practice*,[5] dedicated to the workers at the St. Andrews Institute for Clinical Research, and to Sir James Mackenzie, who supplies a foreword. This book is an exercise in the clinical method, and distinguishes between the effects of disease and the reactions of the body to these effects, as shown in the circulation. It contains an investigation into the mechanism of the variations of the pulse rate in health and disease, based on the analysis of a large number of personal observations. Dr. Wilson believes that the distinction between vagal activity and sympathetic activity as occurring at different times is incorrect, and that there is a continuous reciprocal reaction. Thus external stimuli of the skin and other sense organs primarily excite the vagus, and so would slow the heart, but this vagal "pull" is normally followed by a reflex response on the part of the sympathetic, and an increased pulse rate, which in many cases so dominates the picture that the preliminary vagal effect is not noticed; mechanical stimuli from within, such as food, the foetus *in utero*, menstruation, and pathologically a renal calculus, or a "controlling" appendix, first excite the sympathetic, but a reflex vagal response follows and often dominates the scene; if now external stimuli, mental or sensory, occur, the vagal activity is intensified, and as a result nausea, vomiting, exhaustion, and fainting are prone to follow. By their toxins the infections, other than those of the typhoid and paratyphoid group, render the vagus irritable and more susceptible to external stimuli; hence the vagus is continually making a call on the sympathetic for response, thus causing a rapid pulse; exhaustion may follow, because the reciprocal action of the sympathetic fails from depletion, and the heart and other organs do not react properly. The truth of the statement, at first sight paradoxical, that an irritable vagus may cause tachycardia is shown by the slowing of the pulse that follows a small dose (1/200 grain) of atropine. The toxins of typhoid and paratyphoid are exceptional in exciting the sympathetic and so producing a vagal response, as seen by the relatively slow pulse.

With this conception of the reciprocal action of the vagus ("the nerve of diastole") and the sympathetic ("the nerve of systole") in mind Dr. Wilson ingeniously analyses the various manifestations accompanying cardiac disorder, such as breathlessness, cyanosis, hyperalgesia, and cardiac pain, and thus provides much stimulus for thoughtful investigation by practitioners working on the lines of the St. Andrews Institute for Clinical Research; but it should be pointed out that, although the words "general practice" come into its title, this book stimulates thought rather than provides dogmatic help for the immediate successful treatment of cardiac disease in the course of busy practice.

X-RAY DIAGNOSIS.

THE book on *x*-ray diagnosis, by DR. HERBERT ASSMANN of Leipzig,[6] is perhaps the most comprehensive which has hitherto appeared. Unlike many of the standard works on radiology, it contains no introductory chapter on instrumentation and technique, and throughout very few instruments are illustrated. In its main construction the work divides itself into four parts. The first is a comprehensive treatise on the heart and great vessels, with a short chapter on the mediastinum. This occupies 146 pages, the normal and the abnormal being both fully discussed and illustrated. The diagrams are a distinct feature of this part. The second deals in detail with the lungs and pleura in about the same number of pages, and is profusely illustrated by radiographs of both usual and unusual pathological conditions. The gastro-intestinal tract is discussed in 250 pages. In the concluding portion are found sections dealing with, amongst other things, the liver and gall stones, the diagnosis of kidney conditions, various abnormalities affecting the bones, and so on.

The whole is essentially German in its style, its scope, its wealth of detail, and the painstaking method which is obvious on every page. It is also essentially German as evidenced by the fact that, with a few exceptions which go to prove the rule, the whole of the extensive bibliography which is added at the end of each section consists entirely of German and Austrian references. A perusal of the work and its references leads the reader to the inevitable conclusion that no *x*-ray work of any kind has ever been done outside of Germany and Austria, not even by those of German nationality or extraction who have the good fortune to live in other countries. Having, however, made this criticism—which is a fair one—one cannot fail to recognize the general merits of the book. As a work of reference for an *x*-ray worker who understands the German language, and who is also prepared to wade through a considerable amount of detail in order to extract essentials, it should be invaluable. Nearly 700 pages of letterpress and 633 illustrations speak for themselves. These illustrations are extraordinarily good, and cost has apparently been of no consideration. Many excellent diagrams and reproductions of both photographs and radiographs appear on almost every page, whilst in addition there are some twenty pages of reduced bromide prints which illustrate all the more important points of *x*-ray diagnosis. These are of great excellence and are admirably chosen. Further, both the printing and the paper are of the best. It is not too much to say that the illustrations and diagrams alone are so complete and good that the book will be of value to any radiologist even if he knows no German and so cannot read the letterpress.

THE PHYSIOLOGY OF BACTERIAL INFECTION.

PROFESSOR MAURICE ARTHUS has produced a most readable *Précis de Physiologie Microbienne*.[7] He describes how he was led to undertake his task because all the existing books on this subject gave too large a place to technical considerations and to mere theories. Accordingly he has omitted all description of technique employed in bacteriological and serological practice. His book is not illustrated with diagrams portraying Ehrlich's side-chain theory, nor is it encumbered with the ponderous terminology such expositions necessitate. The known facts are stated with regard to each problem dealt with and the logical deductions carefully considered. The author makes no attempt to disguise his partisanship, for he is a devotee of the "cellular," as opposed to the "humoral," school of thought.

The earlier chapters of the book, which deal with the nutrition and enzyme action of bacteria, are clearly written and the subject matter attractively presented. But the description of bacterial species is somewhat meagre and not altogether free from errors, such as that which occurs on page 110, where the author states that protozoa cannot be cultivated. In subsequent editions attention should be drawn to the fact that spirochaetes, trypanosomes, and some amoebae can be cultivated with ease. The next following chapters deal with immunity problems, such as anaphylaxis and the different properties of normal and immune serum. In discussing the manner of action of complement or alexine, the author points out that, strictly speaking, this substance is neither "fixed" nor "deviated," and therefore to describe the disappearance of complement in immunity reactions he employs the phrase, "consommation de l'alexine." This will illustrate with what assiduity the writer attempts to escape from the compromising effect of inaccurate terminology. He makes his meaning clear in all he has to say about immunity. For him phagocytosis is the basis of the protective properties of both normal and immune serum, and the leucocyte is the pivot on which immunity rests.

This book will appeal to all interested in the theoretical aspects of resistance to infectious disease, but owing to the complete absence of a bibliography and references it is unlikely to replace the existing standard textbooks on immunity.

NOTES ON BOOKS.

MADAME BÉROT-BERGER'S little book on the science of infancy[8] is the last of a series of five from her pen on subjects of medico-social importance. With the French the dwindling birth rate has long been a matter of grave concern, and the authoress has taken a worthy and practical part in conserving the vital resources of the nation. In 1913 the Strauss Act was passed. It has been described as the Baby's Charter,

[5] *The Clinical Study of the Early Symptoms and Treatment of Circulatory Disease in General Practice.* By R. M. Wilson, M.B., Ch.B. With a Foreword by Sir James Mackenzie, M.D., F.R.S., F.R.C.P. Oxford Medical Publications. London: Henry Frowde, and Hodder and Stoughton. 1921. (Demy 8vo, pp. 245, figures 111. 15s.)

[6] *Die Röntgendiagnostik der Inneren Erkrankungen.* By Dr. Herbert Assmann. Leipzig: F. C. W. Vogel. 1921. (Imp. 8vo, pp. 695; 613 figures, 20 plates. M. 330: bound, M. 350).

[7] *Précis de Physiologie Microbienne.* Par M. Arthus. Paris: Masson et Cie. 1921. (Cr. 8vo, pp. 403. Fr. 17 carbonné; Fr. 19 net.)

[8] *Science de l'Enfance, pour de développement général des Tout-Petits.* Par Madame Bérot-Berger, Membre du Conseil Supérieure de la Natalité. Paris: A. Maloine et Fils. 1921. (Cr. 8vo, pp. 90. Fr. 5.)

because under it a fixed daily sum was paid to every working woman in the last four weeks of pregnancy, and for four weeks after her confinement; it authorized also a small financial dole to the working woman who, often at financial sacrifice, nursed her infant for the first year of life. For years before this Madame Bérot-Berger was at work in the industrial towns of Northern France, where the exigencies of female labour in the factories levied a heavy toll of infant life; in certain towns in the Department of the Aisne the organizations she created effected a great reduction in the infantile death rate. Her contribution to the problem was twofold: first, by making it possible for factory women to suckle their infants and continue at work; secondly, by the formation of nurseries for little children from one to four years of age where during the day they were fed and their education in every sense, physical and moral, was carefully supervised by trained workers. The account she gives of this work is enthusiastic; it is supported by minute clear details as to the equipment, personnel, and management of these "garderies d'enfants." The book is written for the guidance of voluntary workers in France in the cause of child welfare, but it can also be recommended to the notice of those engaged in similar work in this country. It cannot fail to be of interest, and may very well also convey valuable practical suggestions for the organized efforts now being widely made on this side of the Channel towards the same end.

THE ninth volume of *Collected Studies*[9] from the Bureau of Laboratories of the City of New York contains some sixty original papers written during the years 1916–1919 on a great variety of what may broadly be termed public health questions. Many of them deal with the prophylaxis or treatment of meningitis and poliomyelitis, others with bacteriological detail of all sorts, others with the practical problems of sanitation—such as the bacteriology of public swimming baths. The book should be accessible to all medical officers of health and public health laboratories.

The *Pharmacopoeia of the University College Hospital*[10] is a neat little waistcoat-pocket volume, and, in addition to the formulae commonly forming the bulk of such books, contains over twenty special tables, lists, and directions of service to medical students and practitioners. It is interleaved for the user's convenience.

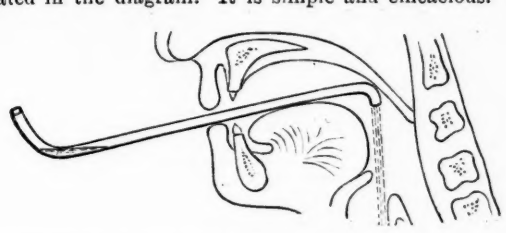
[9] *Collected Studies from the Bureau of Laboratories (Foot of East 16th Street) City of New York.* Dr. W. H. Park, Director. Vol. ix, 1916–1919. City of New York, Department of Health. (Sup. roy. 8vo, pp. 491; 12 figures.)

[10] *Pharmacopoeia of the University College Hospital.* Edited by C. H. Hampshire, B.Sc.Lond., F.I.C. London: J. Bale, Sons, and Danielsson, Ltd. 1921. (3 × 6, pp. 96. 4s. net.)

MEDICAL AND SURGICAL APPLIANCES.

Intratrachael Medication.

IN view of the present epidemic of influenza, with frequent involvement of the larynx, trachea, and bronchi, Dr. A. R. FRIEL thinks that medical men may be interested to be referred to the method recently devised by Professor Leduc of Nantes for the introduction of medicated oily fluids into the trachea by the patient himself, as illustrated in the diagram. It is simple and efficacious. Half a



teaspoonful of oil of almonds containing 1 per cent. of menthol or 1 per cent. of phenol, or both combined, is poured into the wide curve of the glass tube; the short curve is placed far back in the pharynx, the lips tightly closed round the stem, and an inspiration made through the tube. This carries the fluid into the trachea. Each dose can be repeated twice or thrice at a time, and the treatment carried out four or five times daily. No coughing is caused. The tubes can be obtained from Messrs. Mayer and Phelps, New Cavendish Street, W.1.

Snook Apparatus.

Messrs. NEWTON AND WRIGHT, Hornsey Road, London, describe in their latest catalogue some new types of the Snook apparatus which was first manufactured by them in 1908. Amongst other patterns, perhaps the most interesting is that described under the title of "the universal model." This machine is stated to be capable of passing 150 milliampères through a Coolidge tube at a 5-inch spark gap, and to be suitable for deep therapy with a tube working at an alternation gap of 12 inches. The machine is oil-insulated.

LUNACY ADMINISTRATION.

CONFERENCE OF MEDICAL SUPERINTENDENTS AND CHAIRMEN OF VISITING COMMITTEES.

A CONFERENCE on lunacy administration was held in London on January 19th and 20th, at the instance of the Board of Control, and was attended by the medical superintendents and chairmen of visiting committees of practically all the mental hospitals of England and Wales. Sir FREDERICK J. WILLIS, Chairman of the Board of Control, presided, and was accompanied by the Commissioners. The proceedings appeared somewhat inconclusive, owing to the chairman's refusal to take resolutions, although on certain matters there was an evident division of opinion, but it was understood that the Board would be guided by the measure of general assent given to the views expressed, apart from an actual vote. On one matter only the chairman asked for a decision of the Conference. This was the proposal that means should be provided for early treatment without certification, and it commanded the unanimous assent of the Conference. On a further point, that the Board of Control should be the supervising authority with regard to early treatment, there appeared to be only one dissentient.

Sir ALFRED MOND, the Minister of Health, in welcoming the members of the Conference, said that mental disease was only one aspect of disease generally, and in the proportion in which it lost its stigma early treatment would become practicable. If alteration of the law was necessary to secure this end, it would have to be the result of very general agreement on the part of those best able to speak on the subject. The Minister of Health went on to speak of the duties of a medical superintendent, saying that the best use was not made of his attainments if he was compelled to spend very much of his time in routine work. He hoped some means might be found for relieving him from such pressure, and also for providing assistant medical officers with opportunities for post-graduate study.

Early Treatment Without Certification.

The first subject discussed was early treatment (in-patient and out-patient) at mental or general hospitals without certification. Dr. EDWIN GOODALL (Cardiff) supported the policy of the Mental Hospitals Association, that certain institutions should be taken over as psychiatric clinics, and that these should have no association with lunacy or lunacy law. He deplored the complete segregation of all mental cases, and believed that mental disease should be brought into the broad sanctuaries of general medicine. His plan was a system of primary, secondary, and tertiary centres, on the lines of the Dawson report. At the primary centres, in the remoter parts, the patient would be attended by the general practitioner, and hydrotherapeutic and other forms of treatment would be available. At the secondary centre, in a larger town, there would be special wards as well as an out-patient department, with some medical men with special experience in these diseases. At the tertiary centre there would be a separate building for the reception of these cases, and the help of specialists would be available. This tertiary centre would be in a town where there was already a general hospital and medical school. A research institute should also be set up. He was anxious that the whole of this arrangement should be dissociated from mental hospitals. The idea of making it a part of mental hospital organization was one of the compromises dear to the Anglo-Saxon mind.

Professor SHAW BOLTON (Wakefield) took a different view. If this was a new country, with no previous experience of lunacy administration, he would favour the reform suggested by Dr. Goodall, but as it was, he believed it more practicable to work within and to improve the present system. He did not like the prospect of all early cases being removed from asylums, which in that event would be mere gaols. His plan was the provision of an out-patient department and the use of a well-equipped hospital of moderate size, attached to the mental hospital, but involving no question of legal detention or certification. There was an out-patient department attached to his own institution, and those who attended came largely on the recommendation of other patients. He wanted official permission to classify patients; at present if the medical officer permitted any considerable latitude as between one patient and another, he was personally responsible in case of accident.

Dr. T. S. GOOD (Oxford) urged the provision of early clinics, which should be called nervous disorders clinics, not mental clinics, attached to general hospitals, on the ground that

general hospitals were more accessible than mental hospitals, and more comprehensively equipped, and that it would be possible for the general hospital staff to work with the psychiatrists as a united team. Alderman J. G. TAGGART (Chairman, Mental Hospitals Association) regretted that the Board of Control had not given a lead on this matter. His association was unanimously in favour of the introduction of legislation by the Government enabling clinics to be set up for early treatment. He wanted mental experts to be available outside the asylum walls. Lunacy was the only disease of which it might be inferred from the attitude of the authorities towards it that prevention was not better than cure. He did not want the Board of Control to be associated with these prospective centres. Sir GEORGE TRUSCOTT (City of London) said that although his committee's mental hospital was seventeen miles from the city, he thought there would be no difficulty in setting up out-patient departments, one at the hospital itself, and another in the city, at the offices, where one of the medical staff could attend. He wanted any legislation to be permissive, and to be embodied in a short bill, not in an omnibus measure like that proposed in 1920. Sir W. HODGSON pressed for legislation to give enabling powers to local authorities to carry out early treatment, whether by clinics or otherwise.

Dr. HUBERT BOND, speaking as a Commissioner of the Board of Control, deprecated too much insistence on legislation, and pointed out the difficulties with regard to those patients who did not and could not come voluntarily for treatment. Here would be the rock in the passage of legislation. If it was proposed to legislate that such persons should be taken into clinics or mental hospitals without being certified, a section of the public would say that the safeguards of the lunacy laws were being relaxed.

Dr. BEDFORD PIERCE gave an account of an experiment at York where, for the last two years, borderline cases had been received at two comfortable country houses which had been adapted for the purpose. Of the 66 patients received, 13 had recovered, and of those who failed to recover, 13 had subsequently to be certified. The houses were conducted on a voluntary basis, and if a patient became so disordered as to require certification he had to be removed. The individualized medical and nursing care required was considerable, and he did not think that such homes could be conducted at less than six or seven guineas a week for each patient. Dr. WOLSELEY-LEWIS (Maidstone) suggested as a start that the existing mental hospitals should rent one or two houses geographically separate from the institution, but administratively connected, so that the treatment of all mental disease would be in the hands of one and the same authority.

The view that the Board of Control should have charge of the arrangements for early treatment found general acceptance. Dr. RUTHERFORD JEFFREY (Bootham Park) thought that cases for early treatment should be compulsorily notified to the Board. It was not easy to see how there could be control for one group of cases and no control for another. All mental illness affected conduct, and those who treated the early cases deserved protection. Dr. W. F. MENZIES (Cheddleton) and others also thought that the necessary powers should be vested in the Board of Control. One of the Commissioners on the legal side, Mr. A. H. TREVOR, said that the legal members of the Board had always been in favour of the alteration of the law in the direction now suggested. They were anxious to see the law relaxed to permit of early treatment of incipient cases. These early cases should be medically treated without certification for a period, subject to necessary safeguards, and should be kept separate from lunacy cases, though it would be necessary to inspect the treatment afforded. He thought it would be inadvisable to have two Government departments concerned in all this administration, and the Board of Control seemed to be the only authority to carry out this reform.

The CHAIRMAN asked whether he might convey to the Minister of Health the unanimous feeling of the Conference that proper arrangements should be made for the early treatment of mental cases without certification, and that it must be ensured that the places where such early treatment was provided were properly equipped and conducted.

To this proposition the Conference signified unanimous agreement, and to the further point, that the Board of Control was the proper authority to undertake the necessary supervision, there was only one objection, from Alderman TAGGART, who, while willing that the Board of Control should give its approval to the building and equipment, desired that it should not interfere with the management.

Research and Pathological Work.

The organization of research and pathological work was very briefly discussed. Sir FREDERICK MOTT gave an account of the work at Maudsley Hospital, and pleaded for more encouragement to medical men to enter for the Diploma in Psychological Medicine. The kind of research which he desired to see carried out would involve the adequate staffing of mental hospitals with young, energetic medical officers having the right spirit of investigation. Dr. T. P. COWEN (Rainhill) said that too often the pathologist had been regarded as a junior assistant medical officer and had to work isolated and at a disadvantage. He mentioned that the laboratory at Rainhill had been affiliated with Liverpool University, and the benefit had been mutual. Dr. B. H. SHAW (Stafford) emphasized the importance of having the laboratory staff working in close association with the clinical officers. He thought that certain mental hospitals, suitably situated, might have a laboratory and staff capable of undertaking the tests necessary for complete diagnosis, and relieve the necessity for expensive local laboratories; such an arrangement might form the nucleus of an organized laboratory system throughout the country.

Medical Staff and Superintendent's Duties.

The delegation of the duties of medical superintendent was next discussed. Dr. M. A. ARCHDALE (Cambridge) said that in the multiplicity of his administrative duties the medical superintendent tended to become a sort of combination of prison governor and hotel manager, and to get rusty in his medical knowledge. A way must be found whereby the medical superintendent could keep control over his institution and yet not exhaust himself in the details of management. He suggested that in the smaller mental hospitals the medical superintendent should have a non-medical private secretary to relieve him of a good deal of his administrative work, and that in the larger it should be a rule for the second physician to carry on the administration of the hospital under the general direction of his chief, the first officer to be called the medical director and the second the medical secretary. Dr. C. F. BARHAM (Claybury) thought that a new post of sub-administrator, akin to that of registrar of a military hospital, might be created, and only matters of great importance or new policy would then be referred to the medical superintendent.

The DEAN OF LINCOLN said that what the medical superintendent wanted was a bursar secretary, who should be appointed, supervised, and, when necessary, discharged by him. Sir MARRIOTT COOKE (a Commissioner) thought that the medical superintendent might do all the work that was essential in the way of administration and still be able to encourage his medical officers in the pursuance of new systems of treatment, and so forth. Another Commissioner (Dr. H. J. BOND) said that he could not understand what the pother was about: the medical superintendent could do as much or as little in medicine as he liked, and he had only to tell his committee if he had not the necessary officers to whom to delegate his duties.

Study Leave and the Diploma.

In opening a discussion on study leave, Colonel J. R. LORD (Horton) said that the special committee of the Medico-Psychological Association which had been appointed to consider this and cognate questions would, he believed, recommend that county councils should require that all medical officers should obtain the diploma in psychological medicine before their posts were confirmed, or at least that they should go through Part I of the course. Sir WILLIAM HODGSON objected to this requirement being urged at the present moment. It was not true to say that no special training had been afforded hitherto in mental diseases, and it was not wise to place too many impediments in the way of committees in making their selection. Dr. W. F. MENZIES said that committees got what they paid for, and generally more. Years ago the salaries of assistant medical officers were certainly insufficient, and in many cases this was still true. He did not make that complaint of his own institution (Staffordshire Mental Hospital), where the salary of the assistant medical officer started at £700 and rose to £850, with an additional £50 for the diploma.

Dr. E. GOODALL pointed out the educational argument for psychiatric clinics. At present there were only about three places in Great Britain where instruction in psychiatry could be obtained—in the new hospital attached to Bethlem, at the Maudsley Hospital, and at Dr. Robertson's clinic in

Edinburgh. It was a fallacy to suppose that instruction could be obtained by perambulating the asylums. What was wanted was something on the scale of American and Continental clinics, like those at Baltimore, and Chicago, and Munich. Dr. HUBERT BOND associated himself with Dr. Goodall, and suggested that advertisements for medical officers should indicate a preference for holders of the diploma, or should even state that, if an officer without the diploma were appointed facilities would be given for study leave. Dr. D. G. THOMSON pointed to the example of the army and public health services in granting study leave, and said that the root of the difficulty in mental hospitals was under-staffing. Dr. R. H. COLE was inclined to regard the diploma for the time being as a highly specialized attainment, and one which ought not to be required unless it was clearly the intention of the candidate to remain permanently in medico-psychological work.

Women Assistant Medical Officers.

The question of the more frequent appointment of women assistant medical officers was raised by Dr. J. E. P. SHERA (Bath), who praised the capabilities of women; while pointing out certain administrative embarrassments. Dr. W. D. MOORE (Holloway Sanatorium) agreed that women officers were capable, well informed, and painstaking, though occasionally hasty in judgement and lacking in the sense of proportion. He doubted whether medical women considered mental hospital work a career. His own institution had had ten medical women as junior assistant medical officers during the last thirty years; seven of these had left to engage in other forms of work, apart altogether from mental hospitals, and two had resigned owing to ill health. Dr. BEDFORD PIERCE and others paid tributes to the value of the woman officer.

Visiting Specialists.

The advantages afforded to the staff, both in the way of practical help and moral stimulus, by visiting specialists, were instanced by Dr. R. WORTH (Wandsworth), and several medical superintendents gave particulars of the services given by specialists and the fees paid to them.

Classification of Patients.

Dr. R. C. TURNBULL (Severalls) introduced a discussion on this subject. He thought it a mistake to classify patients entirely according to their mental state. Classification was of chief importance with regard to recent cases. Each hospital should have small additional villas for recent cases which were restless and excited; also convalescent villas at a distance from the main hospital. Dr. DAVID RICE (Norwich) thought it desirable to concentrate on keeping one ward at as high a level as possible for recoverable cases. Intellectual and social considerations were important, and he would put a mild epileptic into a ward with recently admitted and recoverable cases if this seemed justifiable on the ground of behaviour and intelligence. The minimum classification for small hospitals was (1) recovering, (2) recoverable and "asylum sane," (3) epileptics and middle-grade chronic, (4) turbulent and lower-grade chronic, (5) infirm, (6) dysenteric and tuberculous. Dr. J. R. LORD said that at Horton the classification was into recoverable and non-recoverable types; it did not matter what the type of insanity was, if there was a chance of recovery the patient should be kept in the recoverable category. Dr. S. J. COLE did not agree with this segregation into recoverable and non-recoverable, and quoted the experience of the Psychiatric Research Institute in Germany to show that dissociation between clinics and asylums had been carried too far.

Dietary of Patients.

The subject of dietary was introduced by Dr. T. C. GRAVES (Birmingham), who pleaded for variety and for regard to the individual patient, especially his customary habit, active or sedentary. Dr. R. W. BRANTHWAITE, one of the Commissioners, said that, on his visits of inspection, in nearly all institutions he found the dietaries insufficient in fat-soluble A and water-soluble B. The food was reasonably varied, but more general use should be made of green vegetables and of flour which was not denuded of the grain embryo. Dr. W. F. MENZIES begged the Board of Control to represent to the Ministry of Health the undesirability of too much economy by local authorities in the provisioning of mental hospitals.

General Administration.

The Conference left much of its agenda unfinished owing to lack of time, and a scheme brought forward by Dr. J. R. LORD for effecting general improvements in lunacy administration was not discussed. His proposal, as briefly outlined to the Conference, was that the country should be divided into a few convenient areas, and that for each area there should be created by the Ministry of Health an advisory committee on mental hygiene composed of lay and medical members elected by each authority having charge of the insane. This body would advise the Board of Control and the local authorities on such matters as the prophylaxis of insanity, after-care of discharged patients, the provision of clinics, the training of staffs, the establishment of laboratories, and general administration of mental hospitals.

A communication from Dr. J. MIDDLEMASS (Sunderland) was read, pleading for the extension of the voluntary boarder system in county and borough hospitals, and arguing that this would facilitate early treatment, and also proper treatment, of cases in which there were recurring attacks with sane intervals.

The question of the nursing staff was not discussed at any length because certain negotiations are now proceeding. On another matter, the CHAIRMAN said that the Board had appointed a small committee to consider the revision of case-books and other records. In declaring the Conference at an end, he expressed a hope that such a conference might be a periodical, perhaps an annual, event.

THE WORK OF THE MEDICAL RESEARCH COUNCIL, 1920-21.

(*Concluded from page 111.*)

Problems of Child Life.

AN important part of the expenditure of the Council is devoted to an extensive scheme for the study at many centres of problems of child life; the practical object immediately in view is to secure knowledge, at present greatly lacking, which may be a sound guide to the conservation of healthy life in the child before and after birth. The account given in the report of these investigations is appropriately divided into two sections—pre-natal and post-natal studies. The minds required for the one section are not necessarily apt for the second; indeed, speaking generally, the obstetric pathologist excels in the ante-natal and the pediatric pathologist in the post-natal work. It is largely the result of the stimulus given to investigation by the Medical Research Council that we find such skilled obstetric and pediatric pathologists available to carry out these studies at the present time.

The report on the pre-natal studies is somewhat disappointingly promissory in character. Statements that certain pieces of work are ready for publication, are almost ready, have been reported on preliminarily, or are being carried forward, are not so attractive as definite information would be. An exception to this general character is found in the work from the Edinburgh Royal Maternity Hospital, where Dr. F. J. Browne has published two important articles, the one on the causes, pathology, and prevention of stillbirths, with full histological details, and the other on syphilis of the newly born; of the former a fairly full summary appeared in this JOURNAL, and the latter was published in the *Journal of Obstetrics and Gynaecology of the British Empire* in its summer number. From these published papers two conclusions can be drawn: the first is that syphilis is a remarkably frequent cause, not only of stillbirth, but also of early post-natal death; and the second that an extraordinary number of stillbirths fall within the hopeful purview of prevention by adequate ante-natal supervision. The researches on stillbirths by workers in Glasgow, London, Liverpool, Leeds, and Cardiff are all in a forward condition; and the Medical Research Council, anticipating difficulties in co-ordinating the results from these various centres, have appointed a small committee, consisting of Professor Noël Paton, Dr. Ballantyne, and Dr. Eardley Holland, to consider the arrangement of the records. Other subjects falling within the group of pre-natal studies are those dealing with problems of pregnancy and lactation; here again some very promising reports seem to be in preparation, and Drs. James Young and Douglas Miller of Edinburgh published last April in this JOURNAL an article on the etiology of eclampsia, in which great causal importance is ascribed to placental infarcts. Dr. J. A. Stephen of Aberdeen is at work on the pathological lesions underlying the commonly reported

deaths from "prematurity"; and by and by we shall have some light on the effect of social and industrial conditions during pregnancy, from the analysis of the data obtained at the various ante-natal clinics which are carefully filling in schedules.

The post-natal studies are in a more forward condition as regards publication than the pre-natal ones. Miss Gladys Hartwell has published the results of feeding lactating rats on excessive amounts of different proteins; the effect on the litter was bad. Five articles on metabolism in infants have been published by Dr. G. B. Fleming of Glasgow and Dr. J. A. Gardner of London dealing with the respiratory exchanges and with sterol metabolism respectively; and work on acidosis in atrophic infants done by Dr. Ruth Guy (of Johns Hopkins University) at the Royal Hospital for Sick Children, Glasgow, has also appeared. A most important conjoint investigation is in progress in connexion with the influence of various factors on nutrition and growth. It is being founded on the study of the schedules used at the Welfare Centres in Glasgow, Edinburgh, Dundee, and Rosyth; the medical officers of health of these towns have been appointed, along with Dr. Stephen of Aberdeen and Dr. Leonard Findlay, a subcommittee to direct and advise on the investigation of post-natal problems. Some of the results of the study of nutrition and economic conditions in Glasgow and Vienna have been published by Miss A. M. T. Tully, Miss Madge R. Gribbon, and by Miss Margaret H. Ferguson. Professor Noël Paton has continued his researches into the relation between the development of the testes and that of the thymus; and Dr. Dingwall Fordyce (now of Liverpool) has carried on his work on the thyroid function in sick children and the effect of thyroid treatment.

Dr. T. Y. Finlay's work on Pirquet's weight and stem length factor should yield useful guides in fixing the measure of normal nutrition at different ages. In all these directions there is plentiful evidence that much good work is being accomplished, and from the results which have already appeared its high value may be gauged. Whilst one would wish for more completed researches and fewer interim reports there can be no doubt that the Medical Research Council is wise in its policy of not attempting to press the research scholars into precipitate publication. Nothing can be less helpful to a piece of investigation than to fix a date for its compulsory termination. The Council is doing a great public service in this as in other respects.

Syphilis.

In the Department of Biochemistry and Pharmacology at the National Institute for Medical Research the routine testing of salvarsan preparations for purity has been continued under the general direction of Dr. Dale. Dr. Burn, Miss Durham and Miss Marchal, members of the staff of the department, have been making a series of estimations of the comparative therapeutic activities of the different salvarsan preparations, and clinical comparisons now being made by Major C. J. White may be expected to show whether the determination of the curative action of salvarsan preparations on mice infected with trypanosomes will furnish an accurate index of the therapeutic value of the preparation in human syphilis. If so it may be possible in due course to add a test for therapeutic efficacy to that which is now made to ensure freedom from abnormal toxicity.

At Oxford Professor Dreyer and Dr. H. K. Ward have devised a new and simple diagnostic test for syphilis, based on the well-known Sachs-Georgi reaction, but differing in the employment of a more stable form of antigen, the sensitiveness of which can be standardized. This new "Sigma test" is quantitative, so that its results can be expressed in standard units. This quantitative element, together with the fact that "complement" and red blood corpuscles, which cause so much trouble in the Wassermann test, are eliminated, offers considerable advantages. The new test has been compared with the Wassermann in a long series of cases, and is claimed to be of at least equal diagnostic value. It is intended to arrange an extensive comparative trial of the two tests in a series of cases in different stages of the disease.

Industrial Medicine.

For the financial reasons stated in our first notice of the Medical Research Council's Report (January 14th, p. 76), it was necessary to reorganize the Industrial Fatigue Research Board. The instruction under which the Board now works is to promote investigation into "the relations of hours of labour and of other conditions of employment, including methods of work, to functions of the human body, having regard both to the preservation of health among the workers and to industrial efficiency; and to advise the Council upon the best means for securing the fullest application of the results of this research work to the needs of industry." Inquiries are now in progress by a number of investigators at different centres into the effects of high temperature, humidity, air movements, and weight-lifting in several industries, including the pottery trade, the cotton industry, linen weaving, and boot and shoe factories. At Glasgow Professor E. P. Cathcart, with the whole-time assistance of Miss E. Bedale, is studying the efficiency of different muscles with special reference to the muscles of women. The services of Miss May Smith, who formerly worked at Oxford with Professor William McDougall on alcohol, have been secured for an investigation of fatigue amongst women workers in laundries, having special reference to arrangement and length of hours, functional periodicity, and general conditions. A committee on the physiology of muscular work has had before it data collected by Dr. H. M. Vernon of temperature, humidity, and other atmospheric conditions in the pottery trade, and by Mr. S. Wyatt of output as correlated with temperature, air movement, and other atmospheric conditions in cotton and flax-weaving factories, special attention being given to questions of ventilation as affecting health and efficiency. The same committee has been considering the report by Professor A. D. Waller and Miss G. de Decker, who receive a grant from the Council, on the physiological effects of muscular work measured by the exhalation of carbon dioxide. The results have been published by these authors in the BRITISH MEDICAL JOURNAL.

Worms and Mites in Cornish Miners.

In 1902 Haldane and Boycott found that ankylostomiasis was rife in certain Cornish tin mines, and that in particular the underground workers in the Dolcoath mine were heavily and generally infected. Seven years later Dr. Boycott reported that in spite of the introduction of sanitary measures there was little diminution in the incidence of the infection. Owing to the difficulty of securing samples from the underground workers Dr. Boycott had found it desirable to rely on the occurrence of eosinophilia as a more readily applicable method of diagnosis. He held that when eosinophilia exceeded 8 per cent. this might be attributed to *ankylostoma* infections. During the summer of 1920 Dr. R. T. Leiper, of the London School of Tropical Medicine, was commissioned by the Council to investigate the present position, with the assistance of Dr. M. Khalil and Mrs. F. E. Philpot, M.Sc. Dr. Leiper found that a remarkable change had taken place since 1909; of 116 underground workers examined only eight exhibited hookworm ova, and of these only two came from the Dolcoath mine. In one other mine, however, six infected men were found among twenty-two underground workers, but the inquiries here could not be continued as the mine was flooded. Dr. Leiper found that eosinophilia up to 29 per cent. occurred in cases where no *ankylostoma* infection could be detected, but in which other parasitic worms were present.

"Of the total of 130 persons examined, including 14 outside workers at the Dolcoath Mine, 14.6 per cent. harboured *Ascaris lumbricoides*, 14.2 per cent. *Trichocephalus*, 2.3 per cent. *Oxyuris vermicularis*, and 5.4 per cent. *Strongyloides intestinalis*, while in 12 persons—that is, 9.2 per cent.—were found the eggs of mites. These last were determined by Mr. Stanley Hirst, of the British Museum (Natural History), as belonging to *Aleurobius farinae*, and to species of *Glycyphagus*. These mites commonly occur in wheat, cheese, sugar, and the like, and apparently gain entrance to the body as contamination of food. The adult forms are killed in their passage through the alimentary canal, but the eggs survive and are able to continue their development after leaving the body. As species of *Glycyphagus* give rise to various skin lesions, among which 'grocers' itch' is the best known, it was thought that some etiological association might be found with the 'bunches' or boils which occur in Cornish miners and are attributed to skin infection with hookworm larvae. Experimental efforts to establish this, however, failed."

With material from the hookworm cases Dr. Khalil, working in London, discovered that in fluid media the larvae always moved towards a source of heat. This observation appears to afford a rational explanation for the penetration of the human skin by hookworm larvae, and is not unlikely to provide a simple and good method for the laboratory detection of the larvae of all nematode worms which pierce the skin.

British Medical Journal.

SATURDAY, JANUARY 28TH, 1922.

THE WELFARE WORKER IN FACTORIES AND WORKSHOPS.

OF welfare workers there are several kinds. The variety with which a report issued recently by the Joint University Council for Social Studies is concerned, is the welfare worker employed in factories and workshops. The report begins by pointing out that, although a few well-known firms had appointed welfare workers before the war, especially where many women were employed, it was not until the advent of the Ministry of Munitions that any great development took place. The Health of Munition Workers Committee was set up in September, 1915. The appointment of a welfare supervisor was made obligatory in all national factories, and was pressed by the Ministry on all controlled munition works. The chief difficulty was to find an adequate supply of trained men and women; and the Welfare Department of the Ministry of Munitions endeavoured to assist employers and managers by providing a panel of selected persons. In 1917 a report was issued on courses of training for welfare workers, which forms the basis of the present report. In 1918 a Final Report of the Health of Munition Workers Committee emphasized further the importance of university training for welfare work.

The Home Office has defined welfare work as "the provision by the management for the workers of the best conditions of employment . . . including everything which bears on the health, safety, and general well-being and efficiency of the worker, while avoiding any interference with his private affairs." To the welfare worker, says the present report, is delegated some part of the function of management; and these definite duties, giving him a recognized place in the internal economy of the factory, form the point of contact between him and the management on the one hand and the workers on the other. Under his supervision come canteens, recreational and educational schemes, medical departments, employment departments, and thrift societies. The isolation of management from workers, which is practically inevitable in large-scale production, is being met by the machinery of the works committees; but the setting up of a works committee does not, says the Committee, solve the problem completely. The whole body of workers must take an interest in its proceedings; a joint committee of the Woolwich Trades and Labour Council and the Woolwich Labour Party states that "Welfare schemes and supervisors must be under a democratic system of control, in which the workers shall have equal participation with the employer." The Joint University Council for Social Studies set out to "equip men and women for posts requiring a wide outlook and some understanding of social theory." The students are divided into three classes: (*a*) the graduate; (*b*) the experienced worker with little or no previous academic training; (*c*) students, matriculated or otherwise, desiring to train for some career for which, given other qualifications, a university degree, though desirable is not necessary—for example, the welfare worker.

The course of training proposed, except in the case of graduates, covers full-time work for two years. The first year is to be devoted to general social study, the second to specialized training. The curriculum includes industrial and social history, economics, social and political philosophy, health and hygiene, psychology, the outlines of central and local government, elementary statistics, industrial law, business organization, and industrial structure and problems. First-aid training is not considered a proper or possible part of the university course, but it is considered desirable that a certificate should be obtained from another source. The course includes actual participation, under supervision, in various social activities which will "give the candidate some first-hand acquaintance with working-class life." This may be obtained partly by working as an operative in a factory (though exclusive training in factory life is deprecated), and partly by residence in a settlement in a working-class neighbourhood. One member of the Committee felt strongly that every candidate for training should have practical experience in a factory for at least six months or a year, and that this should entail residence in a working-class family, the student supporting herself on her wages. The practical side of the training is to include administration in connexion with health, housing, employment and unemployment, education (adult and continuation), administration of justice, juvenile organizations, and after-care.

From this description of the proposed curriculum it may be gathered that the ideal welfare worker will be a veritable Admirable Crichton in social studies. Knowledge, even in small quantities, is not dangerous provided it is not ill-applied. But it is possible that knowledge, which might be perfectly safe in the hands of the distinguished head of the Ratan Tata Department of Social Science and Administration, might not always be wisely applied by an enthusiastic young welfare worker of two years' university training. No doubt it is essential that the welfare worker should be well-educated and broad-minded, since there is evidence in the report that the post is one needing infinite tact. The most illuminating part of the report is to be found in the appendix, which consists of a memorandum on welfare workers prepared by a joint committee of the Woolwich Trades and Labour Council and the Woolwich Labour Party. The welfare worker in a factory is appointed by the employer. The Home Office defines welfare work as the "provision by the management" of the best conditions of employment. The report of the Joint University Council says, "to the welfare worker is delegated some portion of the function of management." The Labour Party has not yet got over its suspicions of the employer. Hence probably the first condition in the Woolwich memorandum that "welfare supervision must aim primarily at promoting the welfare of the workers, and not at increasing the workers' output."

It is unnecessary to go through the other conditions in the memorandum, involving "democratic control," recognition of trade unions, appointment of welfare workers from amongst the workers, "knowledge of trade union aims and methods," and so on. It is sufficient to draw the inference that highly trained welfare workers paid by the employer are likely to need a great deal of tact, whatever may be their knowledge of social and political philosophy and history. On the employer's side also the university-trained worker will need to walk warily. Excessive zeal in scrapping some sanitary arrangement which does not come up to the particular standard favoured by the university professor may involve the employer in an expense he may not be willing or able to face. Again, there exists already an official charged with certain medical duties in connexion with factories—the certifying factory surgeon. We hope the curriculum of the Joint University Council will include some instruction on the relation of the welfare worker to this medical officer. Lastly, though the Woolwich memorandum suggests that there should be the "maximum of

efficient co-operation between local welfare schemes and the municipality, especially with regard to health, housing, transit, and recreation," it would probably be advisable for the welfare worker to refrain from carrying his beneficent work into the home of the worker.

For the moment the development of the activities of the welfare worker in factories and workshops may seem remote from the work of the ordinary medical practitioner. But although in some directions, such as education, employment, and thrift, the functions of the welfare worker may seem quite apart from medical matters, his or her main duties will be concerned with health. In view of the universal demand for improvement in the health of the community, it is the duty of the medical profession to assert its right to the position to which the training of its members entitles it. The fact that a new form of health worker is being evolved should arouse in medical men more than a passing interest in the report of the Joint University Council.

The first curious fact to be noted is that in a council of thirty-two men and women concerned with university courses in social studies for health workers only two members belong to the medical profession—Dr. Janet Lane-Claypon and Sir Cooper Perry, the latter a co-opted member. Even more surprising is the fact that amongst the twenty members of the committee which made recommendations on a syllabus which includes the subjects of health and hygiene, and psychology, there was not a single medical member. The committee was formed of various distinguished professors of economics and social science, a few manufacturers, some representatives of welfare societies, and one or two Government officials. Whether the Committee took any medical evidence does not appear, but even if it did, we venture to suggest that a committee constituted in the way described would have derived considerable advantage, in a matter which is largely one of health, from the presence of a member possessing medical knowledge. Of the value of educated lay opinion in these matters there can be no doubt, but a balanced judgement is more likely to be obtained when all the essential sides of a proposition are represented. The name of the committee appointed by the Ministry of Munitions, the "Health of Munition Workers Committee," is sufficient evidence that the functions of the welfare workers are largely concerned with health. Moreover, the subject of industrial medicine has developed greatly since the war, and proposals have even been made for the employment of whole-time or part-time medical officers in factories in order to prevent the dissipation of energy by fatigue or ill health.

Whether the Joint University Council's vision of a welfare worker who stands between employer and employed on all sorts of questions materializes or not, we are inclined to think that the relation of this individual to the medical profession will sooner or later become of importance. In the meantime the suggestion has been made in some quarters that many of the proposed functions of the welfare worker can be dealt with better by means of works committees, whereon the employer and the employed can discuss broad questions of welfare and management. The position of a highly trained university welfare worker whose allegiance must be to those who employ him, while he is supposed to represent the grievances and difficulties of the employed, can hardly prove satisfactory. In any case we cannot too strongly insist that so far as health and sanitation go, it is to a medical officer of some kind that the management should look for advice, and not to a welfare worker, however intensive his training. This does not preclude the use of suitable women to supervise the girls employed in factories. Nor does it prevent such matters as recreation and thrift being dealt with by committees of the workpeople themselves, with the assistance of their employers. The British workman must be sadly devoid of initiative and energy if, with suitable works committees, he is unable to develop methods for providing himself with many of the facilities set forth as coming under the supervision of the welfare worker.

INFLUENZA.

LATE last week the Ministry of Health issued to the press a summary of the information then available with regard to the prevalence of influenza, a statement most of our readers will have seen in the daily papers. Owing to the fact that the mortality figures of the great towns are not available before we go to press, comments on the epidemiological position necessarily refer to data nearly a fortnight old when the JOURNAL is published, but it will be of some interest to notice such features of the epidemic as had been recorded down to the time of writing.

The Ministry of Health expressed the opinion that, in London, the wave was probably at or near its maximum. The purely statistical evidence, imperfect as this is, supports the conclusion. Deaths in London ascribed to influenza in the four weeks from that ending on December 24th numbered 54, 151, 354, 551. If we apply a method by means of which Farr attempted (with some success) to predict the course of epidemics, and determine the constants of the curve of the particular type he sometimes used[1] so as to make it pass close to the four observations, this curve gives 54, 238, 342, 557, as "calculated" values for the weeks in question, 14 for the week ending December 17th, and 678, 616, 417, and 211 for the weeks ending January 21st, January 28th, February 4th, and February 11th. Upon this hypothesis the maximum would occur in the week ending January 21st. But it is evident that the hypothesis is incorrect and probable that it exaggerates the mortality to be expected. This is confirmed by the actual figure for the week—443.

This particular curve is symmetrical, and our experience of influenza is that the epidemic declines more slowly than it rises. A comparison of computed with actual values shows that, to force events into the required shape, the earlier part of the curve must be exaggerated so as to reach 238 "calculated" at the point when only 151 were actually "observed."

Passing from the imperfect statistical information—imperfect because even *complete* mortality returns are not a satisfactory basis on which to discuss prevalence and the allocation of causes of death can never be scientifically complete—we gather that in hospitals and other institutions in London admissions on account of influenza are decidedly decreasing, an observation which is also favourable to the view that the crest of the wave has been reached.

The Ministry of Health pointed out that the age distribution of deaths in the present recrudescence differed from that of the great pandemic. The relative excess of the oldest age groups which the Ministry noted in the London figures for the week ending January 14th is present, although less emphasized, in the statistics of the 105 great towns where the proportion of deaths at ages over 65 has been rising for three weeks and is now nearly 30 per cent., as compared with less than 10 per cent. in the 1918–19 pandemic. The proportion is indeed very nearly as great as in London in 1891. There is some indication that in the other great towns the proportion of deaths under 5 is appreciably higher than in London. It would be interesting to learn whether any relation exists between a high rate of mortality in childhood (mere returns of deaths at ages without a record of the age distribution of the population at risk are uncertain guides) and the state of nutrition. No doubt the privations imposed by the present condition of

[1] See Farr's *Vital Statistics*, edited by Humphreys, p. 318

trade have varied in severity in different districts, and the relief allowances made by different localities vary.

We have little to add to the information respecting prevalence abroad contained in the Ministry of Health's statement, but we notice in a South German newspaper a telegram, dated January 17th, from Stockholm, asserting that nearly half the inhabitants are more or less stricken by influenza. An earlier telegram in the same journal implied that the numbers of patients removed to hospital in Berlin were beginning to decline at the end of December, while, to judge from local messages, the epidemic was in full progress in the south.

We think there can be no doubt that in this country the disease is generally of a milder type than that which characterized the two later phases of the pandemic of 1918–19. Although it cannot be said that any signs or symptoms have been recorded so far which had not been observed previously, the proportional frequency of particular types is different. Non-catarrhal forms, with a dry and irritating cough, and gastro-intestinal types, sometimes simulating appendicitis, have been more frequent, and the "heliotrope cyanosis" has been much rarer. A good many observers have noted "rashes," in some cases like that of scarlet fever, and lumbago is often mentioned as an early and distressing symptom.

Neither in respect of treatment nor prophylaxis has anything been added to our knowledge within the last few years; the measures recommended in the Ministry's circular, and employed on previous occasions, are still our best means. There is, we believe, a general impression among competent observers, that insufflation of a permanganate solution in normal saline is a much more useful prophylactic than gargling the throat.

On the whole, we see no reason to modify the opinion we expressed a fortnight ago—that this recrudescence is unlikely to attain the dimensions of the third wave of 1918–19, and will be more on the scale of the post-pandemic prevalences of the nineties. We repeat, however, our warning that influenza is terrible on the rebound. What we should like to believe is that the prevalence in the London schools, mentioned in the Ministry's circular, which was noticed towards the end of November and left little trace on the mortality records, was the first wave, and that the present is itself the rebound. But obviously this would not account for the wide dissemination of the disease throughout England. So there remains the small—as we hope and believe, the very small—chance, that after a temporary decline another wave may quickly develop. In our opinion this is an improbable contingency, and we think that the official statement of the case upon which we have commented very justly describes the actual position—namely, that we are experiencing a somewhat severe example of the secondary epidemics which follow in the track of such world storms as shook us in 1918–19.

ART AND MEDICAL SCIENCE.

BERLIOZ—one of the most daring musical minds of his time—was intended by an unimaginative father for the medical profession. There is an apocryphal story that the young man got as far as the dissecting room, and was so horrified at the sight that he incontinently fled and could by no means ever be persuaded to embark on a medical career. Yet if he had, he might have been a happier man, for he would have passed through the fires of self-discipline, and would not have remained, as he did, a moth continually scorching his wings in the flame of life; he would have had the wide experience that was necessary to steady his vision.

It may perhaps be said that it was fortunate that Berlioz abandoned a medical career, for the world might have lost a great artist. This is not really to the point, for it is certain that he could never have become wholly a doctor. He was temperamentally an artist, and artistic expression was absolutely necessary for his very existence. But it is more than probable that the breadth and stability conferred by a medical education would have helped him better to order his imagination, and conduct his life and work.

There are some artists who, along with the artistic temperament, possess an inherently stable intellect which remains unshaken by the emotional storms that are for ever occurring on the sea of creative energy. Others have not this mental strength, and are at the mercy of external suggestion and chance impulses; they are driven hither and thither by the winds that buffet them. Among musicians Wagner, who harnessed his forces, was of the former type; of the latter was Berlioz, who was their slave.

A scientific training may be very beneficial to an artistic mind by keeping it in contact with the realities, out of which science and art spring. For the measure of the difference between these two great sources of human activity is the divergence in their respective interpretations of natural phenomena. This would be hotly denied by the apostles of unreality and unnaturalness, who have of late occupied the foreground of the transformation scene of art, but who are now receding into their proper place. For them art in relation to natural phenomena is played out, and progress lies along the warped way of the grotesque and pathological. We have suffered them long enough. "Their lean and flashy songs grate on their scrannel pipes of wretched straw." The function of the artist is to transfigure, not to distort. To this end science—and especially medical science—may lend him grace. Conversely, it may be held that the possession of artistic susceptibility is inimical to the pursuit of medicine. It may be; but only if uncontrolled. If it is allowed to wander freely and to mix and mingle with the stream of scientific thought, it may become a source of danger. But, kept apart and used on its rightful occasions, it is leaven to the mind.

Mr. Edmund Gosse, in a recent review of the life and work of Mark Akenside, poet and physician, said that he always suspects a doctor of having a half-finished sonnet in his pocket. A pleasant exaggeration, and perhaps a sly dig. Nevertheless, there is no reason why a medical man's work should suffer because his consciousness is occasionally occupied by artistic thoughts. His subconscious thinking continues at least as effectively as if he spent his leisure in any other way. There are some grounds for saying that the practice of medicine is becoming more and more a science and less and less an art. The clinician turns perhaps a little too readily to the laboratory for the solution of his problems, and, when the two differ, it is not always the clinician who is wrong. The rise of the scientific spirit in medicine is one of mankind's finest achievements in progress; no man can foretell what will be the outcome of its growth. But, as long as individual idiosyncrasy exists, the application of scientific methods and results to the human body will continue to be something of an art; demanding, like the other arts, accurate observation, swift intuition, and a catholic understanding.

TESTS FOR COLOUR BLINDNESS IN SEAMEN.

UNTIL comparatively recently candidates for certificates as mates and masters in the mercantile marine, and men working on the railways, were examined for colour blindness by means of pigments of different colours. In the sea service Holmgren's wools were employed, in the railway service the men were asked to distinguish between the colours of dots on a white card. The dot test was employed until quite recently upon the Great Western Railway, and may even now be in use. The North-Western and other railways have for some

years given up pigment tests and used an efficient lantern. The Board of Trade not only prescribed Holmgren's wool test for the examination of officers in the marine, but they also laid down the rule that candidates were not to be asked to name colours, but were to match skeins of wool with three standard, so-called confusion colours. Dr. Edridge-Green and others pointed out that these methods of testing were open to grave objection, in that many who were able to match the colours were in reality dangerously defective in colour perception, while others who failed were not colour blind at all, or at any rate not dangerously so. Dr. Edridge-Green also drew attention to the fact that by none of these tests were men eliminated for whom the red end of the spectrum was shortened. Such men—and there is no doubt that they exist—are unable to perceive a red light of low intensity which is plain to a normal individual. In other words, in a fog at sea they may fail to appreciate a red light which is obvious to the normal sighted. It is only necessary to allude to the fight, long and fierce, waged by Edridge-Green and his supporters with the Board of Trade. Step by step, in face of bitter opposition from officials, from physicists, and from some physiologists and ophthalmologists who might have been expected to know better, ground was gained, although the Board of Trade were supported by the Royal Society, till eventually a committee was formed to examine the whole question. As a result of its report, a lantern was used in the examination side by side with the now obsolete wools. The battle was all but won. The final victory coincided with the appointment of Dr. Edridge-Green as Adviser to the Board of Trade on colour vision and eyesight. Dr. Edridge-Green has just issued his report, which lies before us. It is agreed that anyone who can distinguish between red, green, and white lights at a distance of a mile has sufficiently good colour perception for navigation. Edridge-Green states that 25 per cent. of men have diminished colour perception, and that 5 per cent. will fail to differentiate red, green, and white lights, in a properly constructed lantern, or the actual lights themselves, at a distance of one mile. We gather that, in the opinion of Edridge-Green, men who fail with the lantern are to be held dangerous at sea, and those who pass the lantern test are safe, and this no matter what degree of abnormality in colour perception they may show with other tests. He says definitely that the possession of a sense of yellow is a sure indication of safe colour vision. There are many who will not agree with that portion of the report which deals with the Edridge-Green theory of colour blindness. In the main it may be true, but there are some anomalous cases which the theory fails to explain. As regards the tests we are on surer ground. The men have to name colours shown in a ship's sidelights or from shore lights. It is not part of their duties to match wools. Common sense demands that if the men have to distinguish lantern colours they shall be examined with a lantern. This will in future be done. The Board of Trade will come into line with the Royal Navy and the more enlightened railway companies, and will test its candidates for the work they have to do, and as far as possible under conditions similar to those which obtain at sea.

THE PLAGUE IN SHAKESPEARE'S LONDON.

IT is not always realized that there were several outbreaks of plague in London before the Great Plague of 1665, and that each of them in its turn was called great. The outbreaks of 1592–93 and 1603 were described by Dr. F. P. Wilson, lecturer in English at Oxford University, in an address to the History of Medicine Section of the Royal Society of Medicine on January 18th. Among other details he gave a list of the prophylactics which were recommended by the wiseacres of the time. These included the chewing of lemon rind, which it was suggested later in the discussion might have had a scientific basis, for the essential oils of lemon rind are antiseptic. Another procedure was to fumigate rooms by sprinkling vinegar on a red-hot brick; great faith was placed in peeled onions, the idea being that they would gather to themselves all the infection in the neighbourhood. Treacle was taken internally, and the smoking of tobacco was regarded by some as a rare antidote; others advised a more drastic safeguard in the shape of a draught composed of sack, salad oil, and gunpowder, which, by causing vomiting, expelled any incipient infection. By the writers of the period the plague was ascribed commonly to any of four causes. The first was supernatural, the outbreak being regarded as divine punishment for sin; the second was the corruption of the air. The author of *Timon of Athens*, whether Shakespeare or another, coupled these causes:

> When Jove
> Will o'er some high-viced city hang his poison
> In the sick air.

The third cause was planetary influences; in 1603, for example, astrologers noted that Saturn and Jupiter were in conjunction in Sagittarius. The fourth cause was derangement of the body humours, and treatment differed according to these humours; thus, the sanguine man was bled, and the choleric purged with rhubarb, but it was added that all treatment must be "under the direction of a learned and diligent physician, and not according to the fancy of foolish charwomen." As in many other cases, doctrines false in themselves resulted in excellent hygienic measures. Thus the idea that the air was corrupt caused certain sanitary precautions to be taken, and the idea that the plague was encouraged by body humours led to attention being paid to diet. The plague orders of 1603 showed that the dog was regarded as a carrier; it is an irony that suspicion should have fallen upon the enemy of the rat. The orders forbade the attendance of crowds at burials, fixed the fees of profiteering sextons, and warned the public against unsound food, especially tainted fish and musty corn. Before the sixteenth century there had been no attempt to isolate the infected, but in 1518 infected houses were ordered to be marked by a special sign, and by 1603 the sign was a red cross, and usually the inscription "Lord have mercy upon us!" was added. To this practice Shakespeare refers in *Love's Labour's Lost*. The plague of 1603 reached its height at the end of September, when 3,000 people died in London in a week. Unhappily, when the epidemic became really virulent, the populace got out of control, and the authorities had to sit with folded hands. Many magistrates and others left the town, as did a number of physicians, whose desertion earned the bitter comments of the satirists. But others stayed, including Dr. Thomas Lodge, who in 1603 wrote from Warwick Lane *A Treatise of the Plague, containing the Notes, Signs, and Accidents of the Same, with the certaine and absolute Cure of Feuers, Botches, and Carbuncles that reigne in these times* . . . In the brief discussion following the lecture Dr. F. G. Crookshank quoted from this book to show that even thus early the rat was linked with plague, for Lodge noted that before an outbreak rats, mice, and moles left their underground homes and died in large numbers. Dr. F. W. Cook suggested that the whole of the mortality in these plague years may not have been due to plague; possibly influenza, typhus, and later in the seventeenth century small-pox, took their toll.

MEDICAL MORTALITY IN AMERICA.

IT is estimated by the *Journal of the American Medical Association* that 2,343 medical practitioners died in the United States and Canada during 1921. This, on an estimate of a total of 160,000 practitioners in those countries, is equivalent to an annual death rate of 14.65 per 1,000. The age was stated in 2,118 cases; 29 were under 30, 160 between 31 and 40, 298 between 41 and 50, 409 between 51 and 60, 571 between 61 and 70, 393 between 71 and 80, 240 between 81 and 90, 17 between 91 and 100, and one lived to the age of 101. The greatest number of deaths for a given age occurred at 66, at which age 71 deaths were recorded. Of the 2,009 known causes of death 426 were from diseases of the heart and circulatory system, 128 were from carcinoma and sarcoma, 196 from cerebral haemorrhage, 167 from pneumonia, 79 from chronic nephritis, 47 from tuberculosis, and 32 from

appendicitis. Ninety-seven deaths were stated to be accidental; 41 were caused by automobile accidents, and of these 22 occurred at railway level crossings; firearm accidents accounted for 17 deaths, railway and tramway accidents for 14, and drowning for 6. Nineteen deaths were due to homicide, all caused by firearms, while, *horribile dictu*, one medical man was electrocuted on conviction of the murder of his wife. There were 69 medical deaths from suicide—29 by poison, 19 by firearms, 7 by jumping from high places, 5 by cutting instruments, 4 by drowning, 3 by asphyxiation, and 2 by strangulation.

MAN AND THE LOUSE.

IN his short monograph on *The Louse as a Menace to Man*,[1] issued by the Natural History Department of the British Museum, Dr. James Waterston gives a straightforward account of the life-histories of the three forms of lice which prey on man, and describes methods for their destruction. He insists that the essential factor in the spread of lice is a person who is already infested by the parasites, and, as a rule, transference to a clean person is effected by contact of a more or less direct kind. Contact has long been recognized as the determining condition of dissemination in the case of the crab-louse, but it is no less true of head and body lice, in regard to whose spread many misconceptions are prevalent among the lay population. The importance of close association between clean and infested persons in spreading these pests was abundantly demonstrated in the late war, when men were crowded for long periods in dug-outs and billets, or herded together in prison camps. The normal activity of both head and body lice is found to be greater than was commonly supposed, and this is responsible for their spread; but, in certain circumstances—temperature being the decisive condition—lice will leave their host without the stimulus afforded by contact with the fresh victim. Broadly speaking, says Dr. Waterston, body lice tend to leave a host whose temperature rises above, or falls below, the normal; they are stirred to activity by violent exercise on the part of their host, and in cases of fever will be found moving on the upper blankets. Similarly after the host's death lice appear, sometimes in enormous numbers, while the body is cooling and migrate to surrounding bodies. Typhus fever, relapsing fever, and trench fever are, of course, well known to be spread by lice, while *Bacillus pestis* has also been found in lice feeding on plague patients. There is no evidence, however, that lice are of importance in spreading this disease, although in Dr. Waterston's opinion there is reason to believe that they might on occasion do so. In regard to the destruction of lice, he recommends, for lice on the body, smearing the skin thickly with undiluted paraffin emulsion, followed by a hot bath and clean clothing. In cleansing the head he recommends paraffin oil (preferably) or its emulsion, rubbed in thoroughly, the head being afterwards swathed in a tightly wrapped towel for an hour. Mr. A. Bacot found wood tar oils effective. Mr. Burt Hamilton recently, however, pointed out in our columns that the one essential to safety in any mixture that is to be prescribed for home use is non-inflammability, owing to the ingrained carelessness of the class for which such treatment is usually required; he considered paraffin effective for institutional use, but refused to prescribe so dangerous a method for home use. The question of a suitable mixture for this purpose, which should be cheap, non-inflammable, and harmless to the skin and hair, is one which merits further study.

INDUSTRIAL FATIGUE AND MOTION STUDY.

IN Report No. 14 of the Industrial Fatigue Research Board Mr. Eric Farmer gives a critical summary of the chief observations made by Taylor, Gilbreth, and others on what is generally known as "Time and Motion Study," and the methods of industrial work which they instituted as the result of these observations. Taylor's main object was to obtain a better output from the worker, without much regard to his fatigue. In fact, he stated quite frankly that "all employees should bear in mind that each shop exists, first, last, and all the time, for the purpose of paying dividends to its owners." His method was to divide the work into its various elements and time them separately. The results were then summed and a certain percentage added for unavoidable delays. He chose his best workmen for time study, and induced them to work as fast as possible by increased remuneration. Finally, a standard "task" was set, which required the workman "to do between three and a half and four times as much work in a day as had been done in the past on an average." Gilbreth endeavoured to attain the same objects as Taylor—namely, the standardization of the human element in industry—but he not only standardized the time for doing a task, but the method of doing it. He took the time required by various expert workmen to perform the constituent parts of an industrial operation, and found that some men were quickest at one stage, others at another. He selected the quickest timings from the various men, and combined them to form a standard which represented the shortest possible time that the operation could be completed in. Hence Gilbreth regarded the quickest movement as the best, and he even goes so far as to say that in teaching a new movement speed must be insisted on from the very first. He regards it as more important to get speed than to get accuracy of movement or quality of work. His reason for adopting this point of view is that the path a movement follows is different when the movement is done quickly than when slowly. Mr. Farmer, in criticizing these methods, maintains that the quickest movement is by no means always the best for a worker to accustom himself to. Owing to its inherent difficulty it may cause too great a nervous strain and fatigue him unduly. He considers the underlying principle of motion study to be rhythm and not speed. The best set of movements is the easiest set and not the quickest set. The efforts of the investigator should be concentrated on increasing the ease with which an industrial operation can be performed, thereby lessening fatigue. He should not worry about increased production, though in actual practice it was found invariably that when a proper system was carried out the production went up. For instance, in sweet dipping, when an almond or other centre is placed in a basin of melted sugar and, after being coated, is placed on a tray, most of the workers performed the operation by moving the hand in straight lines, first in one direction and then in another, but by getting them to move the hand in curves, without any sudden changes of direction, they performed the operation more smoothly and easily, and soon increased their output considerably. By the application of somewhat similar methods to the process of packing sweets in bottles the output was increased 50 per cent. When applied to the packing of chocolates in boxes it was increased 38 per cent. Even more striking results than these have been obtained by Mr. Farmer in a metal trade.

THE DETERMINATION OF SEX.

AT the Royal Society of Arts, on January 18th, Mr. Julian S. Huxley, M.A., of Oxford, read a paper on the biological theory of sex. After recalling some of the facts recently ascertained, he said that some twenty years ago American observers had noticed that the chromosomes of various insects differed in the two sexes, the male having one less than the female. Later work had shown that there was a similar sexual difference in the chromosomes of a large number of animals, and it was evident that sex control would be possible if any means could be discovered of influencing the behaviour of the chromosome by causing it more often than usual to stay in the egg and play a part in the embryo. In moths this had actually been achieved. It had yet to be explained, however, how variation in chromosome mechanism in the early stages of development was translated through complex processes into adult sex differences. He gave an account of some very interesting work, as yet unpublished, by Dr. Crew on fowls. It was established

[1] *The Louse as a Menace to Man.* By J. Waterston, B.D., D.Sc. London: Printed by order of the Trustees of the British Museum, and sold at the British Museum (Natural History), and by B. Quaritch, Ltd. and Dulau and Co., Ltd. 1921. Demy 8vo, pp. 20; 4 figures. 6d.)

that changes in metabolism in the delicately adjusted internal environment of higher animals might produce profound alterations in sexual characters. It was possible that substances might be found whose injection, even into the adult organism, might bring about sex change. The only evidence that large changes in sex ratio might be brought about in man was afforded by the recent and as yet unconfirmed work of Siegel, based on statistics collected during the war concerning children conceived when their fathers were home on leave for short periods, and was held to show correlation between the probable sex of the offspring and the time during the menstrual cycle at which impregnation and fertilization occurred. It had to be remembered, of course, that very little certainty had yet been reached as to the exact time during that cycle at which the ovum was liberated. If these statistical results corresponded to reality, the way would be open to a large measure of human sex control, which, if not properly directed, might bring about the most revolutionary social changes. The lecturer touched on partial sex reversal, leading to the production of intersexes, usually referred to in medical literature as pseudohermaphrodites; he thought it probable that maladjusted sex factors might exist in man even as in moths. If human sexual abnormality were considered in the light of recent work on animals, there seemed to be a distinct theoretical possibility that cases of sexual perversion might be cured by injection or grafting of the proper reproductive organ, a procedure which was being tested in Germany. It was highly probable that human intersexes were neither male nor female, but definitely intermediate, and, if so, it must be wrong to assign a normal sex to them legally. Departures from sexual normality were visited with legal pains and moral censure, but if many who thus departed from the normal were simply in the grip of blind hereditary forces, it was clear that a new standard was needed to measure what was now called moral perversion. In conclusion, Mr. Huxley pleaded for a fuller appreciation of the science of pure biology. The tendency at present was for medical research to become more and more biological; but this might induce biology to become more and more medical, which he considered would be dangerous. The medical point of view must naturally be dominated by the study of human and mammalian physiology, while pure biology, busy with nature's myriad types, would be continually discovering more favourable material and new points of view. Dr. P. Chalmers Mitchell, F.R.S., secretary of the Zoological Society of London, who presided, said that in so fundamental a thing as sex, which went right back to the lowest organisms, he would be rather surprised to find different ways of determination. He thought it difficult to believe, for instance, that birds or moths determined through the female and mammals through the male. He would expect to find the same laws operating throughout the animal kingdom. It appeared that the primary distinction of sex was determined at fertilization, and the mechanism was adjusted so that under normal conditions there would be an equal proportion of males and females; although Mr. Huxley had shown that this ratio could be altered experimentally in certain cases, there was a very great difference between primary and secondary sexual characters. He hoped the audience would not go away with the idea that because certain discoveries had been made regarding moths, the world would be revolutionized or even that the criminal law would be amended.

THE HISTORY OF CHEMISTRY.

A GALLERY has been set apart at the Wellcome Historical Medical Museum to illustrate the history of chemistry, from the most primitive use of still and furnace to the exact and elaborate methods of the present day. It has been arranged in such a manner as not merely to interest or even instruct the casual visitor but to inspire the student, and to furnish, so far as this can be done by pictures, manuscripts, and models, a graphic outline of the progress of chemistry through the ages, not forgetting the cloud of magic and superstition out of which it emerged. On the pillars and frieze the student is reminded of the epochs into which the history of chemistry may be divided, the names of its pioneers, and the symbolism which has been employed by ancients and moderns. At one end of the gallery there is placarded the definition of chemistry which appears in Johnson's dictionary, and at the other the definition which appears in Murray's. The objects in the collection include examples of ancient glass apparatus employed by the alchemists; these include matrasses, cucurbits, alembics, and the like. A model of the alchemist's hearth, with its pewter and stoneware, has been installed, as well as the "aludel" of the sixteenth century, used for subliming sulphur or mercury, and, in curiously shaped bottles, specimens of the elements and their symbols as they were known at this period. A most interesting section illustrates the history of perfumes and aromatic substances. The curator has gathered together many specimens of the little containers in which, from Roman times onwards, mixtures of substances of powerful odour have been carried in the hope of warding off plague and other infections. In another cabinet there is a collection of the chemical substances known in ancient times, together with specimens of alkaloids, with the names of those who isolated them, and the date of their introduction so far as these can be ascertained. Other articles, in original or replica, have an interest on account of a particular individual; these include appliances used by Dalton and Faraday in their demonstrations, the pneumatic trough used by Priestley for collecting gases, a porcelain retort which belonged to Joseph Black the discoverer of carbonic acid, old books on chemistry which had been in the possession of the Boyle family, and documents in the handwriting of Caventou, one of the discoverers of quinine, and Labaraque, whose name is associated with the manufacture of sodium carbonate. On the walls of the gallery are carefully chosen pictures, in oil and water-colour, representing personalities and episodes of interest to chemists. Such primary figures are depicted as the Greek Hermes, the Arabian Rhazes, and the German Paracelsus, who insisted that the function of chemistry was not to make gold artificially, but to prepare medicines and substances useful to the arts. The various alchemical processes used in the search for the "philosopher's stone" are depicted on long scrolls by a fifteenth century draughtsman, and there are many paintings of the Dutch and Italian schools, whose artists appreciated the pictorial value of the alchemist in his laboratory, lighted by lurid flames and heaped up with strange accessories, though their rendering may not always have been quite faithful. One interesting portrait is that of Mayow, the father of pneumatic chemistry, who was originally a physician; the visitor is reminded in the same way of Lavoisier, and of Scheele, to whom we owe glycerin and prussic acid; of Dalton, Humphry Davy, and Liebig, and many others. The gallery is dominated by the statue of Joseph Priestley, the discoverer of oxygen and nitric and nitrous oxide.

A SURGICAL TOUR IN THE UNITED STATES AND CANADA.

WE are indebted to Lieut.-Colonel Henry Smith, C.I.E., who has recently retired from the Indian Medical Service, for the following note of his American tour. The Ohio State Medical Association asked me to address their annual meeting in May last, and arranged a tour for me over the North American continent to discuss and demonstrate the treatment of cataract. Though I was not in America on any official footing, the reception I met with was overwhelming. The American War Office put an aeroplane at my disposal, and my American friends arranged for me to see their President. Through the names of Dr. Vail of Cincinnati and of Dr. Meding of New York I wish to thank all those who co-operated with them in giving me hospitality and the opportunity of demonstrating intracapsular extraction of cataract. The arrangements made were perfect, and must have given those concerned an enormous amount of trouble. It was well known that I was not satisfied with the older operations for cataract and after cataract. The American

and Canadian surgeons wished to discuss these matters with me personally and informally in all their aspects. As I have had experience of every variety and every complication in quantity, I was able to give them definite opinions with my reasons for them. At first I was unwilling to operate as I had not my trained assistant, nor would the cases be under my care after operation. So much pressure was put upon me, however, that I consented. Many of the clinics had thus to be raised at short notice, but despite this the material put at my disposal was ample, the clinics ranging from 20 to 78 cataracts. Altogether I operated on over 500 cataracts together with many cases of other intraocular conditions requiring operation. A large proportion of these cases were complicated, and had been already turned down as inoperable—such as cataracts with the iris tied down to the lens all round, night blindness, choroidal degeneration, etc. These cases were much more interesting to the American surgeon than the normal cataract. They were second and third class risks, but I did not object to do them so long as the patient and his surgeon recognized the risks. With the experience I have had I was able to estimate the risks closely, and thus was able to operate with a small percentage of failures. In normal cases I had practically no failures. The American surgeon was interested to learn that cases complicated with night blindness were as good a surgical risk as any other. The cases which interested me most were those of cataract where the other eye had been operated on by the capsulotomy method; all left something—many of them much—to be desired. After seeing these I felt that I had previously been overestimating the merits of the capsulotomy method. From the magnitude of the cataract clinics raised for me at short notice one would think that cataract was prevalent in the United States of America as it is in the Punjab (78 cataracts in one day, for instance). This is not so; it is no more prevalent than in the British Isles. I doubt if America has ever before seen a clinic of 30 cataracts in one day. These clinics and the number who co-operated in raising them prove that the American is not satisfied with the results of the capsulotomy method. The American surgeon stands in the front rank of the surgeons of the world (and he finds that many cataract patients refuse capsulotomy operation because they do not think it worth while). He has no school. The world is his school. He is ready to scrap his machinery the moment he finds someone else has got better. The old world has to look to the new world for the spirit of advance. Another interesting advance was Dr. Lister's ophthalmic school in Chicago, of which I hope to write an account elsewhere. In conclusion, I cannot say how much I appreciate the reception given me by both the general and ophthalmic surgeon in the United States and Canada.

POST-GRADUATE INSTRUCTION IN LONDON.

To consider the needs for medical practitioners in South-West London for post-graduate instruction a committee has been formed of representatives of the Wandsworth Division of the British Medical Association, the South-West London Medical Society, and the medical staff of the Bolingbroke Hospital. Under the auspices of this committee a post-graduate association has been formed, and courses of instruction are being started in connexion with the Bolingbroke Hospital and the St. James's Municipal Hospital; the latter has 750 beds, and has now twelve consultants attached to it. It is intended that members of the South-West London Post-graduate Association should have facilities for attending the practice of those hospitals, and the inaugural address of the course will be delivered on Wednesday, February 1st, at 4.30 p.m., at St. James's Municipal Hospital, Ouseley Road, Balham, by Sir Almroth Wright, K.B.E., F.R.S. All medical practitioners in South-West London are invited to this inaugural meeting; tea will be served at 4 p.m. The idea of carrying on post-graduate instruction in a well equipped municipal (formerly Poor Law) hospital in a suburban district, linked up with a neighbouring general hospital, is an excellent one. The general practitioners in the district will find it very much easier to attend a post-graduate course that is brought, as it were, to their doors than to spend an hour or more getting to the hospital where the course is being conducted. Similar courses might well be started by the consultant staffs of municipal hospitals in other London suburban areas. The provision of post-graduate instruction in the heart of London continues to occupy the attention of other hospitals. During the past year the medical staff of the Central London Throat and Ear Hospital has introduced several new features into its course of instruction for post-graduate and senior students. In December last a special intensive course of eight lectures and demonstrations was given, and this was very largely attended. Another innovation has been the introduction of a consultation afternoon once a month; at these meetings cases are shown and discussed by the members of the staff.

SIR PATRICK MANSON.

A PORTRAIT of Sir Patrick Manson was unveiled on January 20th at the London School of Tropical Medicine by Sir James Michelli, C.M.G. The portrait was subscribed for by a large number of past and present students of the School and other friends of Sir Patrick Manson at home and abroad. It has been executed by Mr. E. Webster, and suitably reproduces the characteristic features and genial expression of the founder of the School. It has been hung in the vestibule, where it will be seen by everyone entering the building. Reproductions are being made by Mr. Malcolm Osborn and will soon be ready. Money has also been subscribed for a medal in recognition of Sir Patrick Manson's services as a clinician. It will bear a portrait of Sir Patrick by Mr. John Pinches, and will be awarded annually to those who distinguish themselves in clinical work. The presentation of the portrait was acknowledged by Sir Patrick Manson himself, and among those present at the ceremony were Admiral of the Fleet Sir Henry Jackson, G.C.B., F.R.S., Surgeon Rear Admiral Sir Percy Bassett-Smith, K.C.B., Major-General Sir William Leishman, K.C.M.G., F.R.S., Major-General Sir Thomas Yarr, K.C.M.G., Sir Leonard Rogers, C.I.E., F.R.S., Dr. J. B. Christopherson, C.B.E., Dr. Andrew Balfour, C.B., Dr. A. G. Bagshaw, C.M.G., Director of the Bureau of Tropical Diseases, and many members of the staff of the Tropical School.

INTERNATIONAL SOCIETY OF THE HISTORY OF MEDICINE.

A MEETING of the permanent committee of this society was held at the Faculty of Medicine in Paris on January 7th. Professor Menetrier (France) presided in the absence of Dr. Tricot-Royer (Belgium). There was a large attendance of delegates, including those from Belgium, Denmark, France, Great Britain, Holland, Norway, Poland, and Switzerland. The statutes of the society were considered and adopted. It was decided that the society should meet in congress in London on July 17th to 22nd next, and afterwards every three years in any town selected by the general assembly. The subscriptions for membership of the society, including the congress, were fixed at 40 francs; for membership of the congress in London only, 50 francs; and for students, associates, and relations of members, 10 francs. Subscriptions from countries other than France were to be paid in the equivalent value in the nation's coinage independently of the exchange. For England the subscriptions will be as follows: For members of the International Society, including annual subscription, £1 12s.; for members of the London Congress only, £2; and for associates, students, and relations of members, 8s. Members of the society and those joining for the congress will be entitled to receive a copy of *Liber Memorialis*, or volume of the proceedings, which will be published after the meeting. The forthcoming congress in London, the headquarters of which will be the Royal Society of Medicine, will, it is hoped, be interesting, and a large attendance is anticipated. Papers will be read on the history of medicine in all its branches. A programme of the meetings and entertainments connected with the congress will be issued shortly. All communications should be addressed to the general secretary, Dr. J. D. Rolleston, 21, Alexandria Mansions, King's Road, London, S.W.3.

Paris.

(From our Correspondent.)

FEE-PAYING HOSPITAL PATIENTS.

I HAVE already mentioned the revolution quietly brought about in the method of recruiting the medical staff of the Paris hospitals, but a movement even more revolutionary from the social point of view is going on in the method of recruiting hospital patients. Nothing is changed in the principle to which the hospital owes its name; the poor are still admitted as freely as ever, but our hospitals are no longer gratuitous. Strange abuses have come to light. In the consultations for minor ailments many persons have presented themselves, glad to benefit by the advice of a leading consultant, but disinclined to put themselves to the cost of even saying "Thank you." Others have unblushingly obtained admission to the surgical clinics or the maternity wards. This scandal at length caused the professional associations to take the matter up, and new regulations have now been made. Henceforth our hospitals are to be free only to patients found after inquiry to be really poor.

In practice, every patient who presents himself at an out-patient department is examined, and it is only on his second attendance that inquiry is made. This plan is followed in order that urgent cases may not be refused. The fee for consultation varies, but is never more than five francs. A hospital day brings in about twenty francs in the surgical department. This money is turned over to the funds of the Assistance Publique, and the medical staff receive nothing. Thus, our hospitals in Paris tend to become in part private hospitals at reduced prices, to the great advantage of a class otherwise too rich for the hospitals and too poor for the nursing homes. What, then, it will be asked, is the position of the medical staff? The *clientèle* they lose on the one side is not given back to them on any other; once again the medical man is to sacrifice himself for humanity, an attitude the nobility of which is recognized by everybody except the tax collector! Again, will not medical teaching suffer? The great specialist consultations, such as those at La Salpêtrière and at the St. Louis, live, so to say, on the immense number of patients who apply; from among them it is possible constantly to keep in touch with some that serve as illustration of a rare syndrome. Shall we not see this source dry up, and will not a number of interesting cases prefer private life to the payment of fees?

This same question arises in provincial towns where the medical staffs show a disposition to transform the hospitals into nursing homes, and where they do not pretend always to give their time, experience, and responsibility *gratis pro Deo*. It must be recognized that in this new after-the-war world actual pauperism is tending to disappear. It is only the disabled and the old who cannot make their own living. A good pair of arms is worth more than a diploma. Everything commands its price. The value of intellectual work only is at the lowest level. Thus, the discussion is carried on between those who look upon medicine as a priesthood and those who hold it to be an occupation by which a man may live.

The priest, it is said, lives by the altar, and there are many of us who ask if our scientific world does not push generosity to a point where the term ceases to be applicable. The example of Pasteur is typical, the commercial development of his discoveries would have endowed his institute more royally than could any Rockefeller. Fortunes have been built up by speculators who have exploited such disinterestedness. In France antidiphtherial serum is sold, on presentation of a medical prescription, by all pharmaceutical chemists, who keep it always in stock and sell it at cost price. In addition local authorities and hospitals supply it gratuitously. Is this a logical procedure? Should not Plutus be invited to recognize generously the value of the life of his child? On the other hand, it is true that we salute with enthusiastic esteem that apostle of antitoxic treatment, Dr. Roux, of whom it may truly be said that he made himself poor for us.

THE FEMINIST QUESTION.

The feminist question has come up again in connexion with the proposal to elect Madame Curie to the Academy of Medicine. It may be recalled that her candidature was turned down before the war by the Academy of Sciences. I ought, perhaps, to say that the Academy of Sciences is one of the five academies which constitute the Institute of France, while the Academy of Medicine is an independent society not attached to the Institute. It includes 100 titular members representing the medical and allied sciences; not all belong to the medical profession. The scientific fame of Madame Curie is such that an academy would honour itself by electing her. There is no objection, then, to her as an individual. It is simply the principle which is in question. There is no doubt that our academies will eventually open their doors to women, but the fruit is not yet ripe. It is a curious thing, but the only systematic opposition to Madame Curie that I have come across is on the part of a lady whose salon may be described as an antechamber of the Institute: "The election of Madame Curie would create a precedent of which Madame X. Y. Z. would take advantage to enter the Académie Française—and that would be scandalous." At the beginning of this letter I spoke of the revolution which has taken place in our minds after the war. As you may now see, I exaggerated!

Yet the times *are* new. The military school of public health in Paris has just opened its doors to civilian medical men and students; they may all make use of the library, museum, lectures, and laboratories. In order to obtain admission foreign medical practitioners must address a request to the Minister of War.

England and Wales.

MEMORIAL TO PROFESSOR DELÉPINE.

IT is proposed to place a bronze memorial tablet to Professor Sheridan Delépine in the Public Health Laboratory at Manchester, and old pupils and friends have been invited to subscribe sums not exceeding one guinea. In connexion with the matter a committee has been formed, including Sir Henry Miers, Vice-Chancellor of Manchester University; Sir Edward Donner, Dr. Niven, Medical Officer of Health of Manchester; Dr. Brindley, Dr. Slater, Mr. Heap, and Dr. Sidebotham. Contributions should be sent to Dr. E. J. Sidebotham, Public Health Laboratory, York Place, Manchester.

ROYAL SANITARY INSTITUTE.

The thirty-third congress and exhibition of the Royal Sanitary Institute will be held at Bournemouth from July 24th to 29th, under the presidency of the Right Hon. J. E. B. Seely, M.P. A preliminary public meeting to inaugurate the organization of the local arrangements was held at the Town Hall, Bournemouth, on January 12th. The introductory lecture to the spring courses of lectures will be delivered at the Institute, 19, Buckingham Palace Road, S.W., by Professor H. R. Kenwood, on January 30th, at 5.30 p.m. A course for sanitary officers will begin on February 1st, and will be in two parts, the fee for the complete course being 5 guineas. Practical training for meat and food inspectors will commence on February 10th, and will be held over two months, the fee, including lectures and demonstrations of Part II of the course for sanitary officers, being 5 guineas, or, without Part II, £4 14s. 6d. A course for women health visitors and child welfare workers will commence on February 3rd, and will be in line with the course of training which has been set out by the Board of Education. The fee for the complete course of lectures and demonstrations is 5 guineas. Forms of application and full particulars of the courses can be obtained from the secretary.

Scotland.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of the Aberdeen Medico-Chirurgical Society held on January 19th Dr. Scott Riddell, the President of the Society, made feeling reference to the deaths of Dr. G. M. Edmond and of Dr. W. R. Pirie. He said that during the last few weeks the hand of death had been laid very heavily on the society, and it was fitting that they should place on record their sense of personal loss and their deep regret at the passing of two of the senior members, Dr. George Maitland Edmond and Dr. William Rattray Pirie. The traditions of medical skill, of professional rectitude, and of devotion to the service of suffering humanity, had always stood high in Aberdeen, and these colleagues whom they

mourned nobly upheld these traditions. But the loss was more than personal to his colleagues; it was felt by the community, by the medical profession in the North of Scotland, and by past and present students of the medical school. Dr. Edmond and Dr. Pirie, as teachers of clinical medicine at the Aberdeen Royal Infirmary, had left their impress on a generation of its graduates, and their names would long be held in affectionate remembrance by many old students at home or abroad. "Our colleagues," Dr. Scott Riddell concluded, "have passed to their rest, full of years of honourable service. They were 'good and faithful servants' of the public and of the profession. 'Si monumentum requiris,' it will be found in the fragrant memories of their full and fruitful lives, which are enshrined in the hearts of many grateful patients and many sorrowing friends. The loss to the medical profession and the medical school is deplored by the members of this society, who had such ample opportunities of appreciating their professional skill, their devotion to duty, and their worth and worthiness as men."

HEALTH OF SCHOOL CHILDREN IN GLASGOW.

In the annual report on the medical inspection and treatment of school children issued by the education authority of Glasgow, Dr. E. T. Roberts states that the statistics confirm the constant improvement in respect of cleanliness and skin conditions since the institution of medical inspection. An improvement in the clothing of the children was also noted, except in the case of footgear. The amount of treatment carried out in the authority's clinics during the year shows an increase in all departments except in that of diseases of the eye. The most striking growth, however, was less in the number of cases treated than in the number of attendances made by these cases. This increase was due to the additional days upon which attendance was possible, and to the improved organization for reporting attendances, absences, etc., between schools, clinics, and attendance officers. The number of ear cases was practically the same as for the previous year, but the number of attendances showed a large increase.

Ireland.

MEMORIAL TO DR. JAMES LITTLE.

A BRONZE plaque bearing a portrait in bas-relief, the work of Mr. Oliver Sheppard, R.H.A., has been erected in the hall of the Royal College of Physicians, Kildare Street, Dublin, in memory of the late Dr. James Little, ex-President of the College, who died in December, 1916. The memorial was presented by the Fellows of the Royal College of Physicians of Ireland, and the ceremony of unveiling took place on January 17th, in the presence of a large and distinguished company, with the President of the College, Sir James Craig, in the chair. Dr. Walter G. Smith, in asking the College to accept the memorial of their ex-president, referred to his intimate association of fifty years with Dr. Little. He could never forget his unvarying kindness and his fostering help to the young aspirant in medicine. Dr. Little was born in Newry, and carried with him through life the impress of his northern nationality. Attracted by the lure of Dublin he forsook his country practice, and came up to town to try his fortune. His appointment as physician to the Adelaide Hospital laid the foundations of his future success. For sixteen years he was Regius Professor of Physic in the University of Dublin, and he was one of the founders of the Dublin (late Leinster) Branch of the British Medical Association. He was appointed Crown nominee on the General Medical Council, and for nineteen years he remained a member of the Council, in the proceedings of which he took a very active share. He was warmly attached to the Royal College of Physicians of Ireland, and received from it every possible token of honour or office. For two years he zealously and courteously filled the responsible and sometimes trying post of registrar of the College. He reigned as President for two years, and steered its course with unfailing dignity, generous hospitality, and consummate tact. He married at the age of 35 and had two sons and a daughter, who survive him. During a long and active life Dr. Little gained the esteem and affection of an immense circle of friends and patients, and his memory would ever be cherished by those who knew him. The Provost of Trinity spoke of the respect and esteem in which Trinity College had ever held its professor of physic, and said that Dr. Little was a good man as well as a great physician.

Correspondence.

CERTAIN ASPECTS OF PAIN.

SIR,—I read with much interest Dr. Henry Head's address on "Certain aspects of pain." Thirty years ago I published the records of my first attempts in the study of pain, Dr. Head following shortly after. He pursued his investigations by tracing the paths into the nerve trunks, spinal cord and brain, and we all admire the brilliant results he achieved. His address, however, reveals that he is not aware of the great progress that has been made in the study of the subject at the periphery, for I find in his paper all his references are based on cases recorded more than a quarter of a century ago.

Records made in the early stages of an investigation with imperfect methods should be discarded when the methods have improved, and the views based upon these imperfect records should be submitted to a rigorous re-examination.

It was in 1891 I discovered that cutaneous hyperalgesia was frequently present in disease of the viscera. At the time I vaguely realized that in this sign we had a valuable aid to diagnosis, and I have since then devoted a good deal of time to the subject. My methods of investigation at first were rather crude, but as years went on these improved, so that I was able to perceive that the matter was more complicated than it appeared at first. Thus there were different kinds of hyperalgesia. Two forms at least could be detected in the skin—a superficial and a deep. They were sometimes both present, and then the superficial lay within the wider-spaced deeper area. In many instances the areas were ill defined, the borders being in a continual state of fluctuation*—that is to say, one part when tested would be extremely sensitive, and a few minutes later it would be found no longer hypersensitive. This fluctuating region would be of a depth sometimes of 2 or 3 inches. Moreover, the size of the area was continually varying, and in some cases with the variation in the disease. Then other tissues besides the skin were found hyperaesthetic, such as the muscles and other subcutaneous tissues. Moreover, a sign often of greater help in diagnosis is the contraction of a few muscle fibres or of a portion of the abdominal muscle wall.

When Dr. Head put forth his views and described his "segmental" areas of cutaneous hyperalgesia, he was not aware of these varieties of hyperalgesia. One of the reasons that has hindered the use of this method of examination is because no one could detect areas such as Dr. Head described. We now realize that cutaneous hyperalgesia does not appear in "segmental bands."

It is a curious matter that no neurologist seems to have sufficiently recognized the great importance of the peripheral distribution of the nervous system or of the skin as a sense organ. For instance, though Dr. Head reckons to tell us the parts of the brain which the pain stimulus reaches, neither he nor any other neurologist can tell us the mechanism by which the stimulus of pain or any other cutaneous sensation passes through the epidermis to reach the nerves which convey the sensation to the brain!

Dr. Head refers to some who "have tried to maintain that the viscera are 'insensitive' and incapable of generating afferent impulses of this order." As I have repeatedly stated that the viscera are insensitive, I take it I am included under the "some." But Dr. Head does not comprehend what is meant. I have found by an enormous number of observations that the viscera are insensitive to mechanical stimuli; that is to say, the stimuli which, when applied to the skin, produce pain, heat, cold, touch, when applied to the viscera do not produce these sensations. I have cut the bowel and stitched it, and pricked and pinched the various abdominal organs in conscious subjects, and no sensation has been experienced. Yet I am well aware that pain can arise from the viscera.

There are two points of great importance that arise from these observations which Dr. Head has missed:

1. The regions of the body which respond to mechanical stimuli such as those described above are supplied with cerebro-spinal sensory nerves. The regions of the body which do not respond are not supplied with these nerves but only with the sympathetic or autonomic nerves.

* This condition of fluctuation is turning out to be a matter of considerable importance in the functioning of peripheral nerves, for we have found it in constant operation in the normal process of life. We can trace evidences of its presence in the central nervous system, and even in the mechanism regulating the heart beat. It seems to be a part of the vital process concerned in the activity of all structures concerned in the production and conduction of stimuli.

2. Pain when it arises in the viscera is due, not to mechanical stimuli, *but to a vital process.*

If the first of these points is correct it opens up a new field in neurology. While my researches support this view, I recognise the matter requires further investigation, and at St. Andrews Institute the whole subject is being reviewed.

In regard to the second point, that visceral pain is produced only by a vital process, we are dealing with the most important part of the subject. Dr. Head speaks of tension as the cause of pain. Now tension, in the ordinary acceptation of the term, is not a vital process. You can distend a hollow muscular organ and make it as "tense" as you like, but you will not produce pain *until you cause a contraction of the muscle fibres*—that is, until you produce a vital process adequate to cause pain. The most effective stimulus for muscle contraction is stretching of the muscle fibres. A full uterus or bladder does not cause pain until the muscle contracts. Stone in the bladder does not cause pain until the contraction of the emptying bladder is stimulated to severe contraction by the presence of the stone.

Dr. Head says, "Tension is the most effective stimulus to any hollow organ; . . . but the injection of even a small quantity of fluid" into the gall bladder "so as materially to raise the pressure, will cause a profound disturbance due to the afferent impulses so generated." He has entirely missed the point in this experiment. You can give a distending enema and raise the pressure, but no pain is produced till the muscle of the bowel contracts. It is the contraction of the wall of the gall bladder, that is, the vital process, which produces pain—not the mechanical raising of the pressure.

The recognition of the fact that pain, the various kinds of hyperalgesia, and the contraction of the muscles of the external body wall are reflexes produced by definite stimuli, and the co-relation of these symptoms with the disease process holds out the prospect for one of the greatest advances in diagnosis that medicine has witnessed.

Recognizing this fact, we are given a clear line to follow, but it must always be remembered that such an investigation requires an accuracy of observation which is rare in clinical medicine. One of the greatest obstacles to the progress of clinical medicine is the absence of accurate observation, or rather the failure to recognize the need for accurate observation, as is shown by Dr. Head when he refers to precise descriptions of accurate observations as "hair-splitting dialectics."—I am, etc.,

J. MACKENZIE.

The St. Andrews Institute for Clinical Research, St. Andrews, Fife, Jan. 12th.

TREATMENT OF CARCINOMA OF THE CERVIX.

SIR,—The object of my letter on this subject was to point out a serious error in Dr. Fletcher Shaw's paper and to suggest eclecticism in the operation, according to the situation and nature of the growth and the condition of the patient, as a possible means of improving the excellent final results given in Mr. Bonney's paper, which dealt with a series of 100 cases with a primary mortality of 20 per cent. I pointed out that this was about the same mortality as that of the chief foreign clinics—as given in Döderlein-Krönig's book on operative gynaecology, published last year (1921), the latest statistics available to me.

If Mr. Bonney has personally performed a second hundred operations and will give his results I shall be happy to quote them; but I do not think it is right to quote the results of the "last hundred" or the "last fifty" cases without knowing that the series was not selected, any more than it would be right to lower Dr. Shaw's 19 per cent. mortality by excluding his early cases, in which the mortality was higher.

Mr. Comyns Berkeley speaks of an absence of accuracy, responsibility, and courtesy in the critics of the results of Wertheim's operation. When a man without obvious cause uses intemperate language of this sort one naturally concludes that he has been touched on a sore spot. I wonder if Dr. McCann's and Dr. Shaw's allusion to the fallacy of the "operability rate" is responsible for this outburst. It is very difficult for an individual to give his "operability rate," though a *hospital* "operability rate" could be given. At the Middlesex Hospital it would include the cases in the special cancer wards. If the gynaecologists see cases in these wards, the cases should be included in determining the "operability rate."

But let us see what Mr. Berkeley's "operability rate" means. In 1916 (BRITISH MEDICAL JOURNAL) Berkeley and Bonney stated that they had operated on 100 cases. For the first 70 they stated that their operability rate was 62.5 per cent. For the remaining 30, owing to the increased number of advanced cases seen, they would not give their operability rate, but did not hesitate to apply the operability rate of 62.5 per cent. to the whole series. And now Mr. Bonney applies this operability rate to a further series—it is true he gives it as *63.5* per cent., but this is evidently a misprint—and says, "the 100 cases with which this paper is concerned represent, therefore, a selection out of 160 cases presenting themselves for treatment." This "inaccuracy" of Berkeley and Bonney is responsible for misleading even a gynaecologist, Mr. Forsdike, who alludes to an important point in his letter—namely, the deaths and disabilities of patients "explored" with a view to performing the extended abdominal hysterectomy.—I am, etc.,

London, W., Jan. 22nd. HERBERT R. SPENCER.

SIR,—Mr. Comyns Berkeley appears to revolve in a small circle, and when he comes to rest he may yet acquire that attitude of sweet reasonableness to enable him to comprehend the purport of my first letter.

He seems to forget that the extended abdominal operation for carcinoma of the cervix is practised by surgeons all over the world, and that the mortality of an operation which is accepted from time to time is not that of Smith and Jones working individually or conjointly, but the average mortality rate based on the mortality statistics of a large number of competent surgeons.

Wertheim in his 500 completed operations published more than ten years ago had 93 deaths (18.6 per cent.), which were distributed as follows:

In the first 100	30	deaths.
In the second 100	22	,,
In the third 100	17	,,
In the fourth 100	9	,,
In the fifth 100	15	,,
Total	93	,,

Further, it will be seen that the mortality for the last 200 cases operated on *more than ten years ago* is 12 per cent., whereas Mr. Berkeley states "that the operative mortality for the last 200 operations conjointly performed by me and my colleague was 13.5 per cent." Although individual operators may from time to time be able to achieve a diminished mortality, which I have achieved in my own work, yet the mortality of the operation must be reckoned by the results obtained from a large number of competent operators, and for this reason I maintain that the mortality still remains at, roughly, 20 per cent.

This high rate can and will be reduced by better technique and by the exercise of judgement in the selection of cases. As the extent of the disease can often only be determined by abdominal exploration, this should be done in all cases which are otherwise suitable, and if the disease be found to be irremovable the operation should be abandoned and subsequent palliative treatment employed.

In conclusion, I would only remark that Mr. Berkeley's sense of humour is such that it causes him to laugh at the wrong time.—I am, etc.,

London, W., Jan. 22nd. F. J. MCCANN.

SUICIDE IN BORDERLAND CASES.

SIR,—With your permission I will briefly deal with a few only of the truly momentous questions arising from Dr. S. E. White's letter in the JOURNAL of January 14th (page 79).

First of all I express the following opinions: Melancholia is a functional disorder. Recovery from it takes place in course of time in practically all who are neither senile nor suffer from chronic disease. All at one stage or another of their illness are potential suicides.

Dr. White writes: "The success of treatment is to be measured by recoveries, not by a drastic system of repression." Those who commit suicide she must admit do not recover. What percentage of suicides does she consider legitimate and permissible under the system of care she advocates? And are the alternatives only her suicidal system and the so-called drastic system? Is there not a rational system? I will say nothing of the loss of valuable lives under the suicidal system, which she faces with brave unconcern, almost all of whom would have recovered under appropriate care, but I will add this from my own observation, that more than one of those who have been in some measure responsible

for such suicides have themselves afterwards broken down from distress resulting from the tragedy. I must apologize for calling her system "suicidal" for short, but no one will, I think, misunderstand what I mean.

Next, Dr. White has not grasped the essential difference between the natural depression, which is a reaction to an appropriate cause in the environment, let us call it melancholy, and melancholia, which is a morbid state, a disorder of the mind, which arises in the majority of cases from no known cause whatever, and the occurrence of which is a mystery even to the patient himself. As is well known, it is often rhythmical and periodic. It is true that in many cases some "slings and arrows" of ill-luck may have been the exciting cause of the attack, but true melancholia, once it has developed, continues independently of this cause, bears no relation either in intensity or duration to it, and it may be quite forgotten; further, the character of the depression is essentially different. It is, in Maudsley's words, a species of caricature of the natural phenomena.

Dr. White, having found that melancholia is natural melancholy, next proceeds to point out that in most cases suicide is no proof of mental aberration. By implication she appears to go much further. The worst cases, she says, may occur in persons with unclouded minds and with altruistic motives, and such acts of suicide may be regarded as heroic. The philosophy of suicide by sane persons is a very abstruse subject, but when we are dealing, not with the sane but with insane persons suffering from melancholia, our line of action, in my opinion, is a very direct and simple one—namely, to prevent it and earn the gratitude of the patient when he recovers.

Lastly, Dr. White wishes to do away with asylums, and to try the effect of hostels, apart from lunacy. There is nothing in the world to prevent the treating anywhere those who "do not need to be certified," but in the meantime what are we to do with those tens of thousands who do need certification? Asylums are necessary just as much as hospitals. Everyone will agree with her that hostels or homes are needed for the early treatment of mild and doubtfully uncertifiable cases of mental disorder. We are all everywhere doing what we can to obtain these. In Edinburgh over fifty beds are now available for this purpose, thanks to our system of lunacy laws; but unfortunately such treatment is open only to those who can afford to pay for it. But, whether treated in an asylum or a hostel or a home, the patient suffering from melancholia must be prevented from committing suicide, though, let us hope, not by the employment of methods that can be described as "drastic."—I am, etc.,

University of Edinburgh, Jan. 21st. GEORGE M. ROBERTSON.

SIR,—My own experience in over a quarter of a century of practice, many years of which have been given to dealing with nervous and borderland cases, leads me to agree entirely with Dr. G. M. Robertson's dictum as to every melancholic being a potential suicide. If the physician who has charge of such cases takes any other view, he will some day get a very rude awakening. It is questionable if almost any system of guarding other than that used in the condemned cell will entirely preclude the risk of suicide, but the "open door" treatment of such cases would inevitably lead to frequent suicide were the treatment carried out in a sanatorium such as advocated by Dr. White. To entirely prevent suicide in such cases is almost impossible.

I have known of a patient choking herself with a bread poultice, and being found dead by her husband's side in the morning, black in the face! I once had to go and cut down a lady—in rooms—who had "swung off" from the curtain pole during a moment's absence of her nurse. I recall another man who drove a three-inch metal pocket-knife handle and blade into his head through his temple with a lump of coal, during a similar very brief unguarded moment. This was in a nursing home, and the remarkable thing was that the patient, owing to the downward course of the knife, did himself no vital injury and made a perfect recovery.

In July, 1920, a patient I had been treating at a hydropathic came to bid me good-bye, and stated he was now quite well and very grateful and so on. He had been very depressed and peculiar. A few minutes later he went for a motor run with his wife, who drove, beside her husband, the nurse behind. He asked her to stop a moment by a beautiful stretch of the Tweed (where the water was deep). A minute later he was drowning before his wife's eyes, deliberately gulping water down to choke himself. He left me at 11 a.m. and by half-past two I saw him stiff and stark dragged out of the river. He had, we found, left his watch and chain, pocket book, and loose silver, and everything of the slightest value, locked up in a drawer in the hotel. This indicated Scottish frugalness perhaps, but more the deliberate and carefully concealed intention to do away with himself.

Such suicides can hardly be prevented in an institution even, certainly not in an open institution of the sanatorium type. The extreme resistive and almost certainly suicidal melancholic is best treated *with all precautions* in a proper institution—more so than almost any type of mental disease, because properly treated they almost invariably recover. Many such cases require forced feeding with mechanical restraint at the time.

Milder borderland cases where there may be no indication of but a possible suspicion of suicidal tendency can well be treated under private medical care without certificate, as advocated by Dr. G. M. Robertson in the *Times*, February 14th, 1920. Close association with a medical man whose sympathy the patient feels he has, will often be of the greatest help. The medical man, needless to say, requires to gain the patient's confidence and to acquire a certain personal dominance over him. This can hardly be gained over a large number of such patients. A few weeks ago an ex-soldier was admitted in a very unstable mental condition to a neurasthenic hospital in the vicinity of Bristol, with, of course, "the open door." About three days later he flung himself over the highest cliff in the Avon gorge and smashed himself almost to pieces. So much for cheerful sanatoria.—I am, etc.,

Clevedon, Somerset, Jan. 16th. THOMAS D. LUKE, M.D.

SIR,—In the JOURNAL of January 14th Dr. S. E. White gives some views on suicide in borderland cases. In my opinion, if a case is committed to an asylum, that is, if the mental condition of the patient is such that it is necessary, under the present conditions in this country, to commit him to an asylum, then, if the case is one of a suicidal nature, to avoid such a calamity and get the patient well is surely the aim and object of an institution. Such an institution which boasts of never having had a suicide for over thirty years shows that it is run exceedingly well.

It would appear from Dr. White's remarks that no effort is made in asylums to cure a patient. It is regretted if cases are sent to an asylum that are unsuitable, but surely the asylum authorities would immediately deal with such a case after a short period of observation, and discharge him. Obviously the success of any treatment is measured by recovery, but in order to get such a case as is under discussion back to normal it is necessary for the patient to remain alive.

Surrounding us at the present time are many causes for natural depression, but should we begin to view these natural causes of depression in such a morbid manner that our minds refuse to function normally on other matters and we become obsessed with a hopeless future and feel that our nearest and dearest would be better without us, then surely we have reached the stage when we can be regarded as slightly mentally unbalanced and requiring treatment.

Dr. White mentions cases having attempted suicide being admitted to an asylum on account of depression due altogether to natural causes. It is agreed that the depression may be due to natural causes, but once an individual carries his depression to such an extent that he wishes to take his life, then he is not meeting the natural causes of depression with normal behaviour. It is obvious that it is not possible to change the conditions under which most of our patients are living, and therefore this explanation is not a solution of the problem. It is agreed that the dread of being taken to an asylum is a very great factor in precipitating a crisis in suicidal borderland cases, but in the absence of suitable institutions it is absolutely essential in many instances to have patients certified in order to preserve their lives for future activities, and I contend that it is better to tide a man over a temporary breakdown by certifying him and sending him to an asylum than to allow the grave risk of his destroying himself and so defeating recovery and removing from his wife and family the hope of future support.

Suicides are far more frequently the termination of a deranged mind than the reverse. One comes across the patient who has worked himself very, very hard, and at the age of 45 to 50 has a severe breakdown and becomes temporarily very suicidal. This type of case generally suffers from an enormous exaggeration of minor facts, and will regard the termination of his existence as being the very best solution for his nearest and dearest. There is not the slightest sanity about such a train of thought. His relatives all love

him, and he is probably the best of husbands, fathers, or brothers, and it is their dearest wish that his life should be preserved and that he should be guarded against committing any injury to himself. This is one of the commonest types that one meets, and I think a large number of suicides we see in the daily papers would come under this heading. The suicide's clarity of vision is only for himself, and all his arguments and statements are quite easily broken down but not eradicated, at any rate for some time.

Suicide is not so common amongst women as amongst men. I think statistics show about three men to one woman as being the average. The commonest form of suicide in the male appears to be hanging, whereas in the female drowning seems to be the principal selection. The spring of the year, about May, is the period in which most suicides occur. This, no doubt, may have some connexion with sexual life increasing the mental depression.

In time we shall have proper institutions for the treatment of borderland cases; cases being admitted for a period in order that the physician may have a good opportunity of effecting a recovery before resorting to certification. It is hard to treat a man who imagines that he is a poached egg and wishes to sit down on a piece of toast and regards the physician who tries to dissuade him from such a belief as the fool of the party, side-by-side with a hard-worked depressed individual who has got a temporary mental breakdown and whose reasoning powers have not entirely left him and is willing to extend every possible help of which his tired mentality is capable towards assisting the physician in his recovery. Nevertheless, it is far better in every case not to take the risk of the patient losing his life, but to send him to an asylum under proper supervision, and in all probability as soon as he has recovered from his attack he will be the first to come and shake your hand and thank you for having acted so wisely.—I am, etc.,

Min'stry of Pensions Neurological Hospital, Oulton Hall, near Leeds, Jan. 17th. P. G. PHILLIPS.

MENTAL HOSPITALS.

SIR,—The plan now being advocated by the Mental Hospitals Association—namely, to set apart seven or eight asylums for voluntary boarders only, as described in the pamphlet just issued—can but result in these particular institutions being stepping-stones to certification, more especially as the treatment will be similar to that given to lunatics.

This was the method adopted during the war as a response to the outcry that the soldiers should not be certified before being given every facility for getting well first. The arrangement did not prove satisfactory, as it has resulted in the number of soldiers certified going up 300 per cent. since 1919.

The atmosphere and traditions of an asylum cannot be wiped out by merely calling a patient a voluntary boarder and the group of buildings a mental hospital. The voluntary boarder will still be held in the meshes of the lunacy administration. Any desire to leave the institution is likely to be met with certification, which often occurs under present conditions. The word "voluntary" becomes meaningless. The medical superintendent can always take it upon himself to say that the patient is not fit to go out. We do not want to perpetuate the system that has worked so disastrously with the soldiers.

There are, according to the pamphlet, 18,000 vacant places in the asylums. How is this? Have they been vacated, as in war time, by overcrowding elsewhere; or by increase in the mortality rate—already far too high? The real, crying need is for hostels—free from all stigma, from all association with lunacy administration—where a large percentage of cures is aimed at, where every effort will be made to stay the patient from becoming a permanent charge on the country. This scheme will obviously lead to great saving of expense.

The pamphlet asks for legislation. None is necessary for hostels without detention. This was emphasized specially in the memorial presented to the health authorities in July, 1914.—I am, etc.,

London, W., Jan. 23rd. OCTAVIA LEWIN.

BIOLOGICAL EFFECTS OF X RAYS.

SIR,—I have read Dr. Curtis Webb's notes of a visit to Erlangen with much interest. Under biological considerations he refers to a theory evolved by Dr. W. J. Turrell of Oxford to account for the observed effects of x and gamma radiations.

It has been shown by several observers that a cell whilst undergoing mitosis is especially vulnerable to these radiations. Starting from this fact, he says: "the essence of reproductive power is in the chromatin, and hard rays poison chromatin, acting probably by a process of oxidation or reduction, so setting free a ferment or toxin." Having thus obtained a mythical toxin from the action of radiations on chromatin, he proceeds to elaborate the theory by further assumptions in respect of antitoxins. Further, he says that "this hypothesis of a toxin explains the latent period before the effects of x rays manifest themselves." How it explains this is not told.

Everyone appreciates the value of a theory which truly leads the investigator, and also the danger of one which gives a false lead because it does not correlate the observed facts and thus has a false basis. I write to call attention to this danger.

Many attempts have been made to detect chemical changes in irradiated tissues and in the various substances of which they are composed; in the vast majority of cases no chemical change has been detected or only insignificant alterations. In contrast to these negative results, the evidence of physical changes is abundant; I refer more especially to alterations in colloidal state. The importance of colloidal states in the manifestations of living matter is every day becoming more clear.

When, further, we take into account, apart from biology, the numerous and profound physical changes which are known to follow exposure to x rays, and the difficulty of effecting chemical changes, must we not hesitate to accept a chemical theory as a working basis, more especially if physical explanations can account for the facts? For there is evidence that some of the biological effects are physical in nature—I refer to alterations in the permeability of membranes, and to the precipitation of colloidal solutions and suspensions, and perhaps to the mitotic changes. Lastly, it may be pointed out that x rays are effective in producing biological change only through the secondary kathode rays (negative corpuscles) which are produced on absorption. There is no doubt that chemical changes will occur later—for instance, after the death of the radiated cells, and it is just here that the latent period may be explained as an interval of time following physical changes before chemical changes supervene.

For these reasons I favour a physical explanation rather than a chemical, in which effects are thought of in terms of toxins and antitoxins.—I am, etc.,

J. C. MOTTRAM,
Research Department, Radium Institute, London.
January 23rd.

MEDICAL ASPECTS OF DELINQUENCY.

SIR,—Dr. Tyson's letter of December 31st, 1921, p. 1130, is so immediately interesting to the profession that I fully expected a number of replies to it.

I quite agree with Dr. Tyson that the profession should have more representation on the magisterial benches, for these reasons:

(*a*) Medical men have had a far wider education than have the majority of recently appointed justices.
(*b*) Medical men have had some training in jurisprudence.
(*c*) Medical men have had daily, almost hourly, to weigh the value of statements and symptoms of those they treat, or, in other words, to deal with evidence, and that is what the justice should do.

I do not agree with the necessity or value of a psychological expert. Personally I should have more confidence in the opinion, as a justice, of a medical practitioner of say some ten years' standing, because such men are daily in contact with the general public, the majority of whom are normal, whilst the psychological expert usually deals with cases of mental deficiency which are more or less pronounced; the opinions of such experts should have more effect when giving evidence, when they could be cross-examined and their evidence weighed with that of the other witnesses, than when their views are stated to their colleagues on the Bench. Unfortunately expert medical evidence, even in important cases, is generally so contradictory that neither jury, judge, nor the public are satisfied.

Neither do I accept the statement that it is the duty of the Bench to prevent crime. Their duty, which they have taken on oath, is to decide upon the weight of evidence whether the accused is guilty or not guilty. What the action of the Bench may be if they find the accused guilty depends upon many circumstances.

If any member of a Bench of justices has any doubt as to

the mental condition of a defendant he can ask for medical evidence. I have been a justice for over forty years, and sat on various benches in two counties and now at this borough, and I have never had any difficulty in obtaining medical testimony, either before or subsequent to the Mental Deficiency Act of 1913.

Even in cases where there have been convictions I have followed them up and asked for careful medical observation while under sentence. As a visiting justice for fourteen years to a large prison I have witnessed how well similar requests for observation are carried out.

At our recent borough quarter sessions, at which Dr. Tyson was present, I felt doubtful as to a prisoner's mental state, and so communicated with the Recorder, who evidently had similar ideas, for though the lad had several previous convictions and had served a period in a reformatory, he simply bound him over and placed him under the observation officer. Here I would suggest that upon a second conviction the observation period should not be less than two years, with a careful medical examination.

For some years I have followed "observation cases," and am satisfied that the majority of those who relapse do so between the tenth and sixteenth months after their first conviction. Probably many even psychological experts will differ from my views; the chief object of this letter is to elicit such differences.—I am, etc.,

Folkestone, Jan. 13th. P. BROOME GILES.

ENCEPHALITIS LETHARGICA AND MENTAL DEFICIENCY.

SIR,—In the BRITISH MEDICAL JOURNAL of January 21st, p. 122, Dr. Drummond draws attention to a statement of mine concerning the difficulty of dealing with children who show moral changes after recovery from an attack of encephalitis lethargica. In the paper in question (*Journal of Mental Science*, October, 1921) these character changes were mentioned as a problem for investigation rather than as an *ex cathedra* pronouncement upon procedure.

However, I hardly consider that Dr. Drummond proves his case, for he explicitly states that "no doubt these cases are not just the class for which the (Mental Deficiency) Act was intended." That was, and still is, my contention. The question at issue is not whether these cases are suitable for institution treatment, but how far they can be brought within the interpretation of mental deficiency as defined by the Mental Deficiency Act, 1913. There are, of course, cases in which the behaviour and the intellectual capacities have undergone so profound a change that they "require care, supervision, and control for their own protection, or for the protection of others," but there are not a few cases in which the alteration in character shows itself as an impish perverseness and lack of emotional control, evidenced, for example, in paroxysmal outbursts of temper, without very marked reduction in educational capacities. Similar results are common in adults, and relatives will, often reluctantly, admit on tactful inquiry that since the illness the patient has become "difficult" or "impossible." I do not think that anyone would suggest that such persons could be dealt with under the Mental Deficiency or Lunacy Acts. Yet these persons belong to the same category as children who have been similarly affected. The difference is one of behaviour—that is, of reaction to the environment of child and adult.

Dr. Drummond states that the two cases under his care were certified as "moral imbeciles on account of vicious propensities apparently resulting from their illness." I submit that to include such cases within the definition of moral imbeciles in the Act is to strain the interpretation which that definition is intended to convey. This view he himself appears to admit, for he writes that it would have been better to certify them as feeble-minded rather than as moral imbeciles. My own view is that while from a practical point of view the use of the term "moral imbecile" has advantages as a generalized description of a particular class of mental defectives, yet from a psychological standpoint it is misleading, for it appears to lend support to the supposition that there exists a specific ethical or moral sense, separate and distinct from the general capacity for reason and the formation of judgements.

The more we learn of the repressions of childhood and of the complexes which may result, the more chary we shall become of diagnosing aberrant conduct as "moral imbecility." I need hardly say that I am fully in agreement with Dr. Drummond in believing that institution treatment is almost always in the interests of these children, as it certainly is in the interest of psychological investigation. The comparatively simple environment of an institution may very possibly restore their emotional balance, so that they may, in course of time, reacquire that control of action which is a necessary qualification for civic life.

Dr. Drummond admits that this question of *permanent* incapacity is a stumbling-block round which a way has to be found if such children are to be dealt with as feeble-minded persons under the Mental Deficiency Act.

If the parents are anxious that their child shall be admitted to an institution, or at any rate are consenting parties to the petition, the case might be dealt with under Section 2 (*a*) of the Act, provided that the Board of Control was prepared to accept the medical certificates as describing a person who may properly be dealt with under the Act. The difficulty will arise if the parents withhold consent, for many magistrates will not be prepared to make an order if they are not satisfied that clear evidence as to "*an early age*," "*permanent* incapacity," etc., is forthcoming.

The whole subject is full of administrative and psychological interest, which must be my excuse for the length of this letter.—I am, etc.,

Birmingham, Jan. 22nd. G. A. AUDEN.

SPINAL ANALGESIA.

SIR,—In his interesting paper on "Eleven thousand cases of spinal analgesia," published in the JOURNAL of November 5th, 1921, Mr. Morrison has not mentioned the actual composition of the solution of stovaine which he uses. I think that possibly the explanation of the persistent headache as an after-effect may be found to lie in the composition of the solution, and perhaps also in the large amount which he injects. Possibly it lies partly in the amount of strychnine injected. What is the strength of the solution? I think he might find headache less frequent and persistent if he were to employ a preliminary injection of morphine and scopolamine.

There is one disadvantage of spinal analgesia—a very real one—which he has not mentioned, and that is the dread of many patients of being pierced in the spine with a needle. Will he tell us how he gets over this? I freeze the skin with ethyl chloride spray, then nick the skin with a scalpel before inserting the needle.

It would be interesting to know how Mr. Morrison ensures anaesthesia for operations on the upper part of the thorax and on the clavicle. Perhaps the specific gravity of his stovaine solution would give the answer. Will he kindly state what that is? Undoubtedly the abdominal relaxation obtained under stovaine spinal analgesia is very complete and satisfactory, and it is a marvel to me that this method has not more completely displaced general anaesthesia for abdominal work.

In the same issue of your paper Dr. Stuart Stock discusses Mr. Boyle's article on "Anaesthesia" published in the JOURNAL dated October 15th, 1921. Referring to ethanesal as a non-toxic inhalation anaesthetic, Dr. Stock adds that "future progress lies along this line of research rather than in the devising of new ways and apparatus to give the older drugs." May I suggest that perhaps future progress also lies along the line of local and spinal analgesics which at one stroke abolish nearly all the dangers and disadvantages of general anaesthetics, whether new or old. I think the day may come when the giving of a general anaesthetic, except in rare and selected instances, for an abdominal operation will be regarded, in Dr. Stock's words (referring to something else), as "little short of a surgical catastrophe" which "must have weighed heavily in the balance against them" (the patients).—I am, etc.,

Indore, Central India, Dec. 2nd, 1921. W. R. BATTYE.

MEDICINE IN ASSAM.

SIR,—I was much interested to read the article on medical work in Assam, in the JOURNAL for December 31st, 1921, page 1128.

I was never a tea-garden doctor, but I was for some years district medical officer on the Assam-Bengal Railway, stationed in Assam, and I was the first secretary of the Assam Branch of the British Medical Association. Consequently I knew personally most of the men practising in the province, and had many opportunities of seeing the conditions of their work. I can unhesitatingly support every-

thing that my old friend Dr. McCombie states in his reply to Dr. Forde.

A keener and more efficient body of men than the majority of the tea-garden doctors it would be difficult to find, and many of them have done good original work in tropical medicine. In their relations with the garden managers everything depended on the possession of their confidence, and once a medical officer had proved himself, his recommendations were always listened to and carried out as far as possible. Of course, nobody ever got all he wanted—what sanitarian ever does? But tea-garden managers are intelligent, educated men, and for the most part thoroughly realize that money spent on sanitation pays good dividends in the increased efficiency of the labour force under their control. As Dr. McCombie says, there is not much opportunity for surgery, but in parasitology and tropical medicine generally there is an unequalled field.

If Dr. Forde had stuck it out and proved his worth, he would have had a very different tale to unfold.—I am, etc.,

W. A. MURRAY,
Late Medical Officer, Assam-Bengal Railway.

Harrogate, Jan. 3rd.

SIR,—Dr. Forde's description of the medical arrangements on the tea gardens of Assam is accurate. The great drawback to the life of the "planters' surgeon" is, in my opinion, the general conditions under which he has to live. The doctor, in the words of one of the senior managers, "is fair game for everybody," his means of getting about are almost impossible; I, for instance, was expected to travel over twenty miles at least once a week on a horse that could hardly carry itself. It is true that the so-called "medical committee" of managers had arranged that I should find my own means of transport, but they did not tell me anything of the difficulties of travel, etc., before I went there. My advice to those whose sentimental ideas of romance and adventure in the East overcome their better judgement is not to take one of the tea-garden appointments—

1. If you are married.
2. If you are offered anything less than Rs.800 a month, together with a free, furnished bungalow to yourself.
3. Unless your first-class passage is paid to and from the place.
4. Unless the usual three years' agreement contains a clause to the effect that you can relinquish the appointment at any time on giving three months' notice in writing.
5. Unless the position as regards the means of getting about is explained. (This is important.)
6. Unless medicine occupies a secondary place in your preferences.

By all means take one of these appointments if—

1. You like games and riding (and polo).
2. If the tropics appeal to you.
3. If you do not feel particularly concerned as to the matter of "saving for a rainy day."
4. If you are lucky enough to get one of the really good billets; there are just a few.
5. If surgery does not appeal to you.
6. If you are in the pink of health and can stand anything.

—I am, etc.,

EXPERIENCED.

January 3rd.

HOSPITALS IN THE TERRITORIAL FORCE.

SIR,—Dr. Bertram Rogers writes rather in anger in reply to my letter on the future of the Territorial general hospitals. It is an unfortunate attitude from which to approach this question, for it has led him to make a communication built up mainly on the two logical fallacies known as *ignoratio elenchi* and *petitio principii*. In plain words, he begs the question and misses the point.

The question that he begs is whether it is better that these great institutions for the treatment of the sick and wounded soldier—and that is their only *raison d'être*—should be run on the rigid military lines which were followed during the war, or whether they should be constituted on the model of the great civil hospitals which has been evolved from the experience of centuries. Dr. Rogers settles this by his statement:

"The system is the best yet devised for soldiers and the well-being of the patients; the efficiency of the administration and the comfort of the officers depends entirely on the qualities of the officer commanding and on him alone."

No doubt that is so under the system in force during the war; but the statement carries with it its own condemnation. To make the efficiency of a hospital to depend on the qualities of one man whose only qualifications might be that he held a commission of lieutenant-colonel, and that he had acquired his experience by having done "a yearly training in a military hospital," was surely a gamble equal to the gamble of the Dardanelles campaign. The "military hospital," it must be remembered, was a regular military hospital where he could certainly learn the whole system of army forms, and indents and official correspondence and all the rest of the red tape of the army, but where he could never acquire the art of working with the medical officers he would meet in the Territorial General Hospitals, officers designated in the "Regulations of the Territorial Force" as "distinguished members of the medical profession" and intended to be treated as such. Nor did his original appointment as administrator ensure anything—it was the "accident of any accident"—he might be a distinguished hospital surgeon or physician, or a general practitioner with no experience of hospitals except as a student, or a professor of anatomy or of any other science. And yet on him depended "the efficiency of the administration and the comfort of the officers."

That is the military system, highly essential in the organization of a battalion fighting in the field, but of very doubtful value in the conduct of a great hospital for the treatment of injury and disease. The "benevolent despot" would no doubt always make the best governor if only he were competent as well; but so far the world has failed to find him; and that is why a good system of government is so very important. Of course no system can ensure efficiency if you get the wrong man to work it, but human nature being what it is the better the system the better the result.

Now the system which seems to me to be the best is that by which our great civil hospitals are run. Dr. Rogers says there were "no gaps" in the Territorial hospitals. I have mentioned two—namely, the absence of medical boards and the want of resident house-surgeons. Dr. Rogers is pleased to jest as to medical boards, and to imply that, once you do away with the unchecked autocracy of the C.O., you are reduced to a sort of Soviet government of medical officers, nurses, orderlies, and patients. The importance of a medical board in a large civil hospital is well known to those who have sat on one, and its suggestions are almost invariably adopted by the lay committee who find the money and manage the business affairs of the institution. Why is it out of place in a hospital where the patients happen to be men in uniform instead of out of it?

The want of house-surgeons was obvious, and should have been met from the earliest period of the war.

Dr. Rogers's treatment of my complaint that consultants were set to do the mechanical work of signing letters and forms and railway warrants and the like is an example of his missing the point. His answer is:

"For my own part I cannot see why the clerical work of making formal replies and filling up forms cannot be done by the sergeant-major or even less highly placed N.C.O. Does the 'Late Captain' wish to do it himself?"

My complaint was not that the N.C.O. wrote the letters but that a busy consultant should have had to waste hours in the mechanical work of signing them. But that is the army system which is "the best yet devised." Not even a rubber stamp was permitted. In my civil capacity I happen to be a magistrate, and I often sign warrants committing a man to prison by a rubber stamp. But to thus complete some form "passed to you, please," is "flat blasphemy" in the army. The main point is, of course, the waste of valuable time involved.

Dr. Rogers is good enough to say that I have never learnt the "first duty of a soldier—namely, to obey." Again I say that I agree that that is the first and most imperative duty of the soldier. But we *à la suite* officers of home general hospitals were in reality nothing but civilians in uniform. Our responsibilities were to the sick and wounded; we were not ordered to apply such-and-such treatment to our patients; our duty was to use our knowledge and our judgement to do our best for them. The soldier is ordered, and rightly ordered, by his superior to do exactly what his superiors think right. If I had been ordered by my commanding officer to amputate the leg of a soldier when I did not consider it necessary to do so, I should have refused, and no court-martial would have ordered me punishment for refusing. But if I had been the captain of a company in the field ordered to attack a certain position and had refused, I should have been shot, and deservedly so. Here is an illustration of the folly of applying military methods to matters which are not really military at all.

Of course there is a class of mind to which all the pomp of

military methods appeals with great force. They love the titles and the rank, the constant salutes, the standing to attention (or at ease) of patients when the medical officer goes round the wards, and the rest of the parade of the army. Very necessary, I again agree, for armies in the field. But is all this necessary for the welfare of hospitals at home? On the contrary, does it not tend to throw into the background the real object for which these hospitals exist? After all, the real problem is this—namely, how best to employ all the best medical and surgical talent of the country for the benefit of the soldier in time of war. My own opinion is that it is unwise to attempt to apply the methods of the regular army to any future Territorial General Hospitals. Dr. Rogers thinks otherwise; but he would be doing a real service if he would explain why, as he says:

"The *à la suite* hospitals have not come up to the expectations that were formed of them and a new system is necessary. I need not say how or why they failed. Anyone who was in charge of a hospital during the war, and kept his ears and eyes open, knows why."

That is not very illuminating. If he knows why he should surely tell us.—I am, etc.,

January 8th. LATE CAPTAIN R.A.M.C. *à la suite.*

VIENNA AND LONDON.

SIR,—I have obtained and have studied a copy of the programme of the post-graduate courses now in progress in Vienna. It is a broadsheet printed on both sides. On the one side are the particulars of a course designed apparently for general practitioners and consisting of a score or more lectures and demonstrations, by as many authorities, on diseases of the digestive organs and their treatment. The course lasts the inside of a fortnight, and the charge even to an outlander is only 10,000 kronen, or something less (so I am told) than 10s. at the present rate of exchange in Vienna. On the other side is announced a long series of courses on a great variety of subjects, from ordinary anatomy to the use of those latest instruments of clinical precision—the bronchoscope and the ureteroscope; the charges for most of these courses vary from 5,000 kronen to 200,000 (£10), but in respect of some it is stated that the post-graduate must make his own terms with the teacher, and I have heard rumours of as much as £100 being charged; but this may be for a course in English, and it may be, too, that the total is divided among all the attendants: if they numbered ten, or even five, the charge to each might not be out of the way.

Incidentally, I would ask the Executive Committee of the Fellowship of Medicine and Post-Graduate Association whether it might not follow the example of Vienna and replace its extravagant weekly bulletin by a broadsheet such as this, which contains all the information for a whole quarter any possible applicant can want.

But it is not on this very minor point that I am moved to write. I see that the broadsheet is issued by the Wiener Medizinische Fakultät; the courses, then, are organized by the medical faculty of the University of Vienna. I seek information as to what the University of London and its medical faculty have done to help in the organization of post-graduate teaching in London. I pause for a reply, suggesting only that the properest person to make it is the Dean of the Faculty of Medicine, who is also, I believe, the representative of the Senate of the University on the Council of the Fellowship of Medicine and Post-Graduate Association.—I am, etc.,

January 21st. PALINURUS.

THE INHERITANCE OF ACQUIRED CHARACTERS AND OF MATERNAL IMPRESSIONS.

SIR,—There has been for a long time, and there still is, a diversity of opinion amongst biologists as to the inheritance of acquired characters. Some affirm that such inheritance does take place, at any rate occasionally; others affirm that these characters are never inherited, and they proceed to explain how such an occurrence is impossible, because, for a character to be inherited, the factor upon which it depends must exist in the germ plasm, by means of which it is conveyed from parent to offspring; whereas an acquired character, not being of germinal origin, is not inherited, nor, indeed, can be. A feature which is not characteristic of the species, and which makes its first appearance after birth, or, indeed, at any time after conception, is an acquired character, and is not transmitted from parent to offspring.

A familiar example of an acquired character is the "docked" tail of a fox terrier. The docking takes place after birth, and is an artificial modification; it does not depend upon the germinal constitution of either parent, and is never transmitted, so far as I have been informed. On the other hand, the features which are specially characteristic of the fox terrier breed, such as size, general build, shape of head, colour, texture of coat, and "mental" qualities, are dependent upon the germinal constitution derived from the parents, and are inherited.

A conflict of opinion also exists in regard to the influence of maternal impression. Some observers contend that strong, violent, or unusual impressions, whether mental or physical, experienced by the mother during pregnancy may, and sometimes do, produce an associated modification in the offspring, and there undoubtedly is a strong and widespread tendency to attribute any abnormality in the child to some unusual effect experienced by the mother during pregnancy. Others declare that such a sequence or apparent correlation is merely a chance coincidence.

There are great difficulties in testing these questions in the human subject by the experimental method, so that we are practically restricted to observation. As a matter of fact, however, the late war has supplied us with the conditions of experiment on the grandest scale, and it is very desirable that full advantage should be taken of the opportunity. Many mothers must have experienced unusual and painful impressions during their recent pregnancies, and thousands of men who fought, and were more or less mutilated by gunshot or otherwise, have become fathers since returning home.

If acquired characters are inherited to any marked extent, or if there is solid ground for the prevalent belief in the influence of maternal impressions, surely we ought to meet with some instances in the families of our ex-service men. If any such instances are observed they should be reported, and I would like to suggest that such reports should not be published in various journals but sent to some central office, where they can be collected and investigated. Probably the best place is the Eugenics Laboratory of University College, London. This is under the direction of Professor Karl Pearson, who, I am sure, would be glad to receive and deal with any reports sent to him.—I am, etc.,

Wrexham, Jan. 19th. H. DRINKWATER, M.D.

TREATMENT OF GONORRHOEA BY ELECTROLYSIS.

SIR,—My paper in the BRITISH MEDICAL JOURNAL of December 31st, 1921, reported the results obtained in 500 cases. This led to a letter from Mr. Wyndham Powell, in which incredulity was expressed at more than one aspect of the work, though at the outset he declined to enter into the value of the method. This latter is all that matters to the profession or the public. His latest letter is directed entirely to personal opinions on irrigation, which is not the principal matter.

In view of the need for improvement in the treatment of gonorrhoea the experiences of others of the positive value of electrolysis would, I believe, interest your readers.—I am, etc.,

London, W., Jan. 20th. CHARLES RUSS, M.B., M.R.C.S.

SIR,—I was pleased to see that Mr. Russ was able to publish a further series of cases of gonorrhoea treated satisfactorily by electrolysis.

Whatever may be the facts and their interpretation concerning the pathological lesions of an infected urethra there can be no doubt that many patients up and down the country have reason to be grateful to Mr. Russ for his investigations. I hesitate to accept all Mr. Wyndham Powell's findings as correct, as they are in many respects contrary to my own experience; especially is his statement that a second infection can be cured in a week or ten days open to discussion. It must, however, be admitted that many years will elapse before a final verdict, as to whether strictures do or do not occur under electrolytic treatment, can be finally given. That they do form when irrigations are largely used we know full well, and we seldom meet a patient with a stricture who does not give a previous history of a long course of lavage at some earlier period of his life.

In 1917, as a temporary surgeon lieutenant in the navy, I found myself in Italy with spare time and a large number of cases of gonorrhoea. Having read Mr. Russ's book I had the necessary rheostats and apparatus made on board, and,

following his methods closely, proceeded to treat the cases. Those with fresh infections were chosen, and in all a cure was obtained more rapidly than by any of the orthodox methods. Treatment was given daily or on alternate days, and after about the tenth application the patient's urethra was "dry," that is to say, no sign of discharge could be found macroscopically—a condition rarely seen so soon under other methods. Further applications were given at wider intervals until no threads were voided in the morning specimen, this being the rough and ready but practical standard of cure used in His Majesty's ships.

A microscopic examination of the urine of several patients was made later in the Army Hospital at Gibraltar, and in nearly all of these no gonococci were found. It must be remembered, too, that the whole treatment was carried out in an experimental manner with home-made apparatus in a foreign country, away from many of the ordinary facilities of practice. Subsequent elaboration of the technique has only further convinced me that we have in this method a valuable new weapon. Admittedly it has its limitations, the chief being that as each case must be treated individually for some time every day it is more suitable for private practice than for dealing with large bodies of service patients. This, however, should not deter us from practising it whenever opportunities offer.—I am, etc.,

Westminster, S.W., Jan. 7th. G. MURRAY HEIRON.

SIR,—Anyone taking the trouble to look over the monographs and subject matter of the principles of Dr. Charles Russ's work on the treatment of gonorrhoea, cystitis, ulcers, septic hands, etc., will see that since 1910 there has been a continuous development of that work. Moreover, anyone who has had the opportunity of seeing (as I have) the results of his treatment, especially in gonorrhoea, can but recognize the powerful weapon Dr. Russ has placed in our hands for the treatment of many septic processes.

In consequence of the widespread adoption of his electrolysis treatment by medical men, both in their private and institutional work, it appears now to be the time to ungrudgingly admit its value and acknowledge the good results we can attain through it.—I am, etc.,

VIVIAN WALL, L.R.C.P., M.R.C.S., L.S.A.,
Late R.M.O., London Lock Hospital (Female).

London, W., Jan. 27th.

PELIOSIS RHEUMATICA.

SIR,—I read with much interest Mr. H. V. Jackson's letter in your issue of December 24th, 1921, on "A case of peliosis rheumatica." The disease is no great rarity in Constantinople. My experience of it, however, leads me to differ from your correspondent as regards the first of the three points he mentions as distinguishing this affection from acute rheumatism. I recall one case at least (ending in death) in which the joint pains were excessively severe, so severe, indeed, that the mere movements of persons in the sick-room seemed to cause the patient exquisite suffering. (Osler, too, I may recall, states that "the joint affections are usually slight, though associated with much pain.")

In another case a complication developed which I have not found mentioned in any textbook. The case was a mild one, and all the symptoms were subsiding when pain and redness appeared in one eye, rapidly proceeding to an acute panophthalmitis and destruction of the organ. The rapidity of the process was remarkable. When seen one day at 2 p.m. there was no sign of eye trouble; but on the next day's visit at 6 p.m. there were intense chemosis, violent conjunctivitis, irido-cyclitis, pus in the anterior chamber, and the eye was already doomed. Unfortunately neither the patient nor his friends had realized the gravity of the condition; they sent for me during the twenty-six or twenty-seven hours that had elapsed since the eye symptoms set in, and the eye had consequently remained without treatment during that period.

The complication made no difference to the course of the general disease, which steadily and indeed rapidly subsided.—I am, etc.,

Constantinople, Jan. 12th. F. G. CLEMOW, M.D.Edin.

MULTIPLE TOOTH EXTRACTION.

SIR,—There is no doubt that a considerable number of teeth are extracted for diseases to which they have no relation, and there is also no doubt that in some cases many teeth are retained which might have been sacrificed to the benefit of the patient. The difficulty is to determine the degree of infection for which they may be responsible. Mr. Denison Pedley assumes that by clinical examination he was able to determine that a patient of his, a doctor, had two teeth which were the cause of his ill-health. The teeth being unsaveable he extracted, and the others, which he is treating, he is retaining, to the advantage of the patient.

Now, the misfortune about pyorrhoea alveolaris is that it is impossible clinically to determine the degree of infection of the alveolar process, and many cases submitted to radiological examination are found to show deep infection of the bone—to show, in fact, a chronic alveolitis.

The all-important question is, Can this osteitis be cured by local measures when the teeth are retained? My impression is that it cannot be cured, so that even if the gum margins by treatment be given a healthy appearance the patient is still suffering from osteitis and getting infection by way of the lymphatics.

In cases of oral sepsis supposed to be related to systemic disease it is doubtful, except when the local disease is advanced, whether the clinician can give a sound opinion without a careful examination of radiograms of the jaws of his patient.—I am, etc.,

London, W., Jan. 16th. STANLEY COLYER, M.D.

THE VALUE OF FRUIT JUICE.

SIR,—Dr. H. C. Cameron, whilst rightly castigating the exploitation of the word "vitamin," fails to appreciate the importance of fruit juice in therapeutics when he says, "Fruit juice will not do anybody any harm. It will cure and it will prevent one thing only—scurvy."

If he will recall the experience of the ages as to the value of grapes and oranges in all febrile conditions, and of the important effects of apple pulp and apple juice in chronic nephritis, and will, for example, experiment with and observe the result of the use of raisin tea in gastric catarrh, and the debilities connected with atonic indigestion, he will, I think, place on a far higher standard various fruit juices in the prevention and treatment of ailments which are greatly reducing the happiness of living.—I am, etc.,

London, W., Jan. 16th. JOSIAH OLDFIELD.

ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the Committee held on January 10th 18 cases were considered and £181 voted to 14 applicants. The following is a summary of some of the cases relieved:

Daughter, aged 66, of M.R.C.S.Eng. who died in 1895. Owing to diminishing income applicant finds it difficult to pay her way. She received last year £28 for copying work, £30 from dividends, and a Christmas gift of £5. Rent, light, and use of kitchen stove cost 14s. per week. Voted £18 in twelve instalments.

Widow, aged 62, of L.R.C.P.Edin. who died in 1909. Applicant receives boarders and is helped by a niece. She asks for help towards paying mortgage interest. Relieved eleven times, £110; last time £10, January, 1921. Voted £10.

Daughter, aged 69, of M.D Edin. who died in 1875. Applicant and her sisters are unable to meet their expenses; their income amounts to £127; rent and rates £50 per annum. Relieved six times, £78; last £18, January, 1921. Voted £18 jointly.

Widow, aged 80, of M.R.C.S.Eng. who died in 1870. Applicant's income is diminishing and last year she only received £41 from investments and £35 from a married daughter. Ground rent and repairs amount to £13, and her board and lodging cost £52 per annum. Relieved three times, £76; last £12 in twelve instalments, December, 1920. Voted £12 in twelve instalments.

Daughter, aged 48, of M.R.C.S.Eng. who died in 1885. Through ill health she is entirely dependent upon her sister. Relieved by the Fund five times. Last time, £10, April, 1920. Voted £10.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters J. Symonds, K.B.E., C.B., F.R.C.S., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is overwhelmed, in these days of exorbitant prices for clothing and household necessaries, with applications for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for secondhand clothes and household articles for the benefit of the widows and children who in happier times would not have needed assistance. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

ADMISSIONS to the clinic of the Innsbruck medical faculty have been suspended, as the number of medical men in the country is considered to be excessive. Owing to financial strain the administration of the principal hospital in Innsbruck has limited the number of beds to 300, and has dismissed a certain number of its medical and nursing staff.

Obituary.

EDWIN RAYNER, M.D., F.R.C.S.,

Formerly Treasurer of the British Medical Association.

MEMBERS of the British Medical Association will learn with regret that Dr. Rayner, Treasurer of the Association from 1907 to 1916, died on January 18th. He had been in failing health for some years, and last autumn underwent the operation of prostatectomy. He had attained the age of 77.

Edwin Rayner was a member of a family long settled in Stockport. He was the eldest son of Dr. William Rayner, who was a member of the Stockport Town Council for twenty-three years and mayor in 1883–4. His son received his early education at the Stockport Grammar School, of whose governors in later life he was chairman. His scientific education began at Owens College, Manchester, and was continued at University College, London, and in Paris. He graduated B.A.London in 1863, but his time in Paris was something more than a passing visit, for he took there the degrees of B.L. and B.Sc. in 1864. He always retained a strong interest in French medicine, in which he was well read, and also in French politics; the capacious pockets of the rather old-fashioned coat he affected were seldom without one or two copies of the Paris newspaper to which at the time he happened to be subscribing. He was British juror in the class of medicine and surgery at the International Exhibitions held at Brussels in 1910 and at Turin in 1911.

As a young man he held the appointments of house-surgeon and house-physician at University College Hospital. He graduated M.B.Lond. in 1869, taking honours and the gold medal in forensic medicine, a success which put him in a position to graduate M.D. in the following year. He was an Associate of Owens College, Manchester, and in 1883 received the degree of B.Sc. from the Victoria University. He had taken the diploma of F.R.C.S.Eng. in 1869. He settled in Stockport, and for many years his activities were closely associated with that rapidly growing town which, though in the county of Chester, is only five or six miles from Manchester, and, like its big neighbour, is a busy centre of the cotton trade. He was for nineteen years medical officer of health and public analyst for the borough, offices he resigned in 1892. He was a hard working member of the staff of the Stockport Infirmary, and after serving for thirty-four years as surgeon was in 1908 elected consulting surgeon. He was J.P. for the borough and took an active interest in its affairs, showing himself always ready to promote medical and social schemes for solving the many difficulties which inevitably arise when the growth of trade causes great increase of population on a cramped site. He was an original governor of the Pendlebury Orphanage, and was eventually chairman of the governors, and had been a magistrate for the borough of Stockport since 1880. During the war he interested himself in the establishment of an auxiliary military hospital in Stockport, and was an active member of its surgical staff.

Dr. Rayner had long been a member of the Association when in 1894 he was elected President of the Lancashire and Cheshire Branch. Then as now, perhaps then even more than now, that large and active Branch exercised a great influence on the policy of the Association, and Rayner's interest in its administration may be said to have dated from his tenure of this office. He represented the Branch on the Council in 1896–97–98, in 1903 and 1904, and again in 1905 and 1906. As he became a member of the Association in 1877 he had known it before the reconstitution of 1883, the principles of which he never approved. The old plan of a large Council, meeting once a year, with a committee of council elected out of it to maintain continuity in the administration of the affairs of the Association, had many defects and was not wholly logical, but it at least put the final decision into the hands of a body of men who were constantly interested throughout the year in the work of the Branches. The constitution of 1883 reduced the size of the Council and made it the actual administrative body, meeting quarterly and holding also several meetings during the annual meeting. The Association, however, remained a company (trading not for profit) and the Council was required to make an annual report to the general meeting of the company. The vast majority of members took very little interest in this meeting, which was more or less a chance assembly of those attracted by other considerations to the town in which the annual meeting was being held. A certain number of members critical of the proceedings of the Council, however, made it a practice to attend, and discussions ensued which were often acrimonious and seldom edifying. The need for a reform in procedure had become evident.

Rayner was an old-fashioned English Liberal in politics and a firm believer in the representative system of government as commonly understood. He therefore welcomed proposals for a revision of the constitution, but the idea of delegation with which many of the most active reformers were imbued was distasteful to him. He, however, accepted it, believing probably that in practice the Representative Meeting would as a general rule act in the sense its title connoted. His election to be Treasurer was something of a trial of strength: the Council had put forward another candidate, but Rayner was successful.

His term of office as Treasurer was not free from anxieties; the Association had sunk a large sum in its new buildings, and was subsequently called upon to meet serious expenditure in connexion with the discussion of the National Insurance Bill and the proposals for its amendment. He resisted a proposal to incur a permanent debt by the issue of debentures, believing that the Association would be able to meet all liabilities within a reasonable time by the judicious management of its income. In this he proved to be right, and with the able assistance of the late Mr. Guy Elliston so managed matters that when he laid down his office the finances of the Association were in a sound position. He gave a great deal of thought and time to the work of Treasurer, was acquainted with every detail, and seemed to be almost as much in London as Stockport.

Dr. Rayner was a man of quiet demeanour and, outwardly at least, of tranquil temperament. He was shrewd and kindly, ready to sympathize with a friend in trouble and to help if possible. He had his own share of sorrows and bore them with quiet courage. As a member of the Council of the Association his fellow councillors learnt to place great reliance on his judgement, never willingly given without full consideration.

He retired from Stockport eighteen months ago and went to reside at Woking; there he died and was buried at Frensham, near by, on the afternoon of January 21st. The British Medical Association was represented at the funeral by Dr. Alfred Cox. At the same hour a memorial service was held at St. Mary's Parish Church, Stockport. It was attended by representatives of the borough and county magistrates, of the Stockport Infirmary, of the Stockport Medical Society, and of the many local institutions with which Dr. Rayner had been connected, and by the Mayor and other members of the Stockport Town Council.

Dr. Rayner married in 1870 Miss Hartree of London, by whom and by two sons and four daughters he is survived.

We are indebted to Sir JENNER VERRALL for the following tribute to the memory of Dr. Rayner, with whom he worked on the Council for many years:

Though there are, one will hope, many members thoroughly conversant with the work of Dr. Rayner on behalf of the Association, may I be allowed from an intimate knowledge of the way in which the work was done, to add my testimony to his great worth? As Treasurer his most important help was given, and this at very difficult and anxious times. For a long period we were indebted to him for sound advice on financial matters; it was a great pleasure to Dr. Rayner that the position of the Association in this respect had been much improved during his tenure of office. But out of my memory of many years' association with him I would speak of his geniality and charm of manner, his goodness of heart, and abundant sympathy. This he carried with him in working hours and, when work was over, he was an excellent friend and companion. I have never met anyone who so convinced you that hospitality and friendly intercourse were a joy to him. So long as his health and strength remained he grudged no labour, no thought in our service, and we who loved and trusted him will assuredly keep his memory green.

Dr. ALFRED COX, Medical Secretary of the Association, writes:

Dr. Rayner belonged to that honoured band of men who are prepared to do anything for the British Medical Association, and fate so ordained it that he was placed in a position to prove his devotion. With an excellent practice and an assured local position he found himself able to give as much time to our central work as is expected from a Treasurer—and that means a great deal. I had met him on some of the committees of the Association beforehand, but my first real

acquaintance with him began in August, 1907, when, at the Annual Meeting at Exeter, Sir Victor Horsley moved and I seconded his election as Treasurer. There was a sharp contest, in which Dr. Rayner represented those who earnestly believed in the then new constitution of the Association, while his opponent, Mr. C. R. Straton of Wilton, a highly esteemed member of the Council, was regarded as representing the more conservative views. After the election Dr. Rayner said that he had been a member of the Association for some thirty years and had taken a great interest in the work both of his own Branch and that of the Association generally; he hoped that at the end of his term of office, if he lived for the three years, they would say he had done his work as well as those who had preceded him. He lived not only to have this said of him, but to make a record, for he held the office for nine years, resigning in 1916. In that year he was elected by the Representative Meeting as a whole as one of the four members of Council chosen by it, and finally retired from the Council in 1917. In 1914 he was awarded the Gold Medal of the Association, and the Chairman of Council (Dr. Macdonald), in presenting it, told the meeting what an anxious post that of Treasurer had been for the past few years, and referred to the "distinguished bravery" Dr. Rayner had shown in administering the finances of the Association during a critical period. The term was not an exaggeration.

I came on the Central Staff in 1908, and then saw a great deal of Dr. Rayner, though, of course, as Treasurer he came much more in contact with my deceased colleague Mr. Guy Elliston. A Treasurer, however, is *ex officio* a member of all committees, and Dr. Rayner did his full share of committee work. The impression mainly left on my mind by him was his cheery optimism. He was as good as a sunny day coming into the office. We went through some most anxious times during his term as Treasurer, but I never saw him downhearted. His faith in the future of the Association was unassailable. The most striking evidence of this was the occasion on which, when the funds of the Association were heavily overdrawn by the demands made on us by the Insurance Act fight and the bankers were getting restive, he offered to place (and I believe did place) his own private account at the service of the Association. He was a very hospitable man and nothing gave him greater pleasure than to collect a few of his fellow workers together, as he frequently did at the National Liberal Club, and give them a good dinner. He enjoyed such a function thoroughly, and he saw that all his guests did too. Another thing which could not fail to strike anyone brought closely into contact with him was his pride in his profession, in his own practice, and in his own town. I never knew a man who was prouder of his position as a general practitioner than Dr. Rayner was. He regarded his patients as part of his family and was ready to put himself to any amount of inconvenience for any of them. As I look at his photograph which hangs in my office I feel devoutly thankful for the privilege of having worked with a man like Dr. Rayner and for an Association which can attract and command the devotion of such men.

DR. JAMES LAWRENCE, late of Darlington, died at the close of last year at Westward Ho, North Devon, whither he had retired some two years ago. Born in 1844, near Portrush, he received his medical education at Belfast and Dublin, graduating M.D., M.Ch., R.U.I. in 1871, and taking the M.R.C.S.Eng. diploma in 1872. In the latter year he went to Darlington Hospital as house-surgeon, and in 1874 he was appointed medical superintendent to the Infectious Diseases Hospital, becoming medical officer of health in 1882. He supervised the building of the Darlington Fever Hospital on its present site, and worked hard and successfully to improve the sanitary conditions of the town. He had also an extensive private practice, and was for many years senior surgeon to the Darlington General Hospital. He was held in the highest affection and esteem by all who knew him, and his fellow practitioners marked their appreciation, personally and professionally, by making him a handsome presentation on his retirement from the office of medical officer of health in 1911. Dr. Lawrence was keenly interested in many branches of sport; he had been a well known oarsman, and he was a director of the Darlington Football Club. He was an old member of the British Medical Association, and at the last meeting of the Darlington Division a resolution of condolence was unanimously passed, many tributes being paid by the members present to the memory of Dr. Lawrence. He leaves a widow and five children.

VITAL STATISTICS FOR ENGLAND AND WALES, 1921.

WE are indebted to the Registrar-General for the following statement regarding the birth rates and death rates and the rates of infantile mortality in England and Wales and certain parts of the country during 1921.

ENGLAND AND WALES.

Birth Rate, Death Rate, and Infant Mortality during the Year 1921 (Provisional Figures).

	Birth Rate per 1,000 Total Population.	Death Rate per 1,000 Population (Crude Rate).	Deaths Under One Year per 1,000 Births.
England and Wales	22.4	12.1	83
96 great towns, including London (populations exceeding 50,000 at the Census of 1911)	23.5	12.3	87
148 smaller towns (populations from 20,000 to 50,000 at the Census of 1911)	22.7	11.3	84
London	22.8	12.4	79

The death rate for England and Wales relates to the whole population, but that for London and the groups of towns to the civilian population only.

The death rate for England and Wales is the lowest on record for the country as a whole, and the infant mortality is the lowest on record with the exception of the rate in 1920. The birth rate is the lowest recorded for the whole country except in the war years 1915–1919.

The Services.

SANATORIUM TREATMENT FOR TUBERCULOUS OFFICERS.

AN Army Council Instruction (No. 15 of 1922) provides that as from January 1st of this year the cost of sanatorium treatment for officers and nurses on full or half pay who are suffering from tuberculosis, and whose disabilities have been contracted in and by military service, may be refunded up to a limit of 8 guineas a week. Officers and nurses whose disabilities have not been directly contracted in and by military service, but have only been aggravated by such service, will cease from the same date to be eligible for such sanatorium grants. This Instruction cancels Army Council Instruction 339 of 1919.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on January 20th the following medical degrees were conferred:—

M.D.—Sir William T. Lister.
M.B., B.CH.—R. L. Williams.
B.CH.—*D. Crawford, G. F. Abercrombie, W. R. Carling, *C. Dunscombe.
* Admitted by proxy.

UNIVERSITY OF ST. ANDREWS.

AT the Graduation Ceremonial held on January 20th the following were among the degrees conferred:

M.B., CH.B.—T. K. Buchanan, Phyllis Fleming, Nona S. Lesslie, Katharine D. Macfarlane, J. N. D. Smith, Margaret H. R. Young.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Hunterian Lectures.—Mr. Kenneth M. Walker will deliver a Hunterian lecture on the nature and cause of old age enlargement of the prostate in the theatre of the Royal College of Surgeons, Lincoln's Inn Fields, W.C., on Friday, February 3rd, at 5 p.m. Mr. Alan H. Todd will deliver a Hunterian lecture on orthopaedic aspects of rheumatoid arthritis on Monday, February 6th, at 5 p.m.

THE provisional figures of deaths in the great towns registered in the week ending January 21st show a considerable decrease in London, where 443 deaths from influenza are returned, as compared with 551 in the previous week. The total for the 105 great towns has increased from 1,262 to 1,433. The most noteworthy increases are in the northern and midland cities, especially Newcastle-on-Tyne, 82 against 23 in the previous week, Gateshead 42 (13), Sunderland 40 (6). In the south, Brighton, Bristol and Portsmouth record increases. One-third of the deaths from influenza in London are of persons over 65.

Medical News.

THE first of Sir Leonard Rogers's three Lettsomian Lectures on amoebic liver abscess will be given before the Medical Society of London on Monday, January 30th, at 9 p.m. This lecture will deal with etiology and pathology. In his second lecture on Wednesday, February 8th, Sir Leonard Rogers will consider the varieties and treatment; and in the third lecture on Monday, February 20th, he will discuss prevention and the recent reduction in prevalence and mortality.

A THREE weeks' course of post-graduate study for general practitioners will be given, under the direction of Sir James Mackenzie, at the St. Andrews Institute for Clinical Research, commencing on May 3rd. The course will consist of lecture demonstrations dealing with the symptomatology of disease in its early stages, and will be supplemented by demonstrations on matters of clinical interest in anatomy, physiology, chemistry, bacteriology, ophthalmology, and radiology. The fee is 10 guineas. Early application should be made to the Secretary, the Clinical Institute, St. Andrews, for particulars and advice with regard to securing rooms.

SIX lectures on the physiology and pathology of ante-natal and early post-natal life will be given by Dr. W. M. Feldman at the Infants' Hospital, Vincent Square, Westminster, S.W., on Thursdays, at 4 p.m., commencing on February 2nd. Members of the profession are invited to attend.

A FUND for a wedding present to Princess Mary has been opened by the Lord Mayor of Manchester and the Mayor of Salford. It is hoped to raise one million shillings (£50,000) between Manchester and Salford, and the object to which this sum is to be devoted is the District Nursing Association. The income will be used to add another fifteen nurses to the fifty-three at present working among the sick poor of Manchester and Salford, and it is proposed to call them Princess Mary nurses.

A FURTHER course of lectures and practical instruction for the Diploma in Psychological Medicine, granted by several universities, will be held at the Bethlem Royal Hospital, London, commencing at the end of this month. Lectures will be given by members of the staff of the Bethlem Royal Hospital and others, including Dr. Kinnier Wilson, Dr. William Brown, Sir Maurice Craig, Dr. M. H. Smith, Dr. J. A. Hadfield, Dr. James Collier, and Dr. C. Standford Read.

A REUTER'S telegram announces that Sir Arthur Currie, principal of McGill University, has received the following intimation from Lord Atholstan, the Canadian newspaper proprietor, better known in this country as Sir Hugh Graham, LL.D. *honoris causa* of the University of Glasgow: "To help in stimulating the work of research throughout the world I hereby offer a prize of 100,000 dollars to the graduate or student of any recognized university who within five years after this date is the first to discover a medicinal treatment for the effective cure of cancer, the decision to be left to the Royal Colleges of Physicians and Surgeons, London, England. This offer may be renewed."

THE Voluntary Hospitals Commission has had under consideration the preparation of a simplified uniform system of accounts which could be recommended for adoption by hospitals to which the uniform system of King Edward's Fund may be inapplicable. The Commission has appointed a small subcommittee to draft proposals for this purpose, and has secured the assistance of Captain H. G. Howitt, D.S.O., of Messrs. W. B. Peat and Co., who was closely associated with the preparation of the financial statements for Lord Cave's Committee on the Voluntary Hospitals.

A CONGRESS of medical education, licensing, public health, and hospitals will be held in Chicago from March 6th to 10th. The congress will include representives of the Council on Medical Education and Hospitals and the Council of Public Instruction of the American Medical Association, the Association of American Medical Colleges, the Federation of State Medical Boards of the United States, and the American Conference on Hospital Service.

THE last issue of the *St. Dunstan's Review*, which is published monthly as a record of St. Dunstan's men all over the world, is a special memorial number commemorating the life and work of the late Sir Arthur Pearson, whose tragic death all interested in the welfare of the blind so greatly deplore. Included with the account of the funeral and details of Sir Arthur Pearson's fascinating career are a number of personal memoirs and tributes, which were paid to his memory from all over the world. The work to which he was so devoted is being carried on unfalteringly, and, as we have already announced, a memorial fund has been initiated to consolidate and endow all the charities for the blind in which Sir Arthur Pearson was interested.

DR. J. GORDON THOMSON, lecturer on protozoology at the London School of Tropical Medicine, has, at the invitation of the British South Africa Company, gone to Rhodesia to investigate protozoological diseases in Rhodesia. Dr. Thomson, who sailed on January 5th, expects to be absent six months, and will give special attention to the etiology of blackwater fever.

A CONFERENCE of experts is in session at the Ministry of Health, under the chairmanship of Mr. I. G. Gibbon, C.B.E., Assistant Secretary to the Ministry, to consider what measures can be taken in view of the shortage of water which now exists, and is thought not unlikely to increase in the near future. The members are Sir Alexander Houston, M.D., Metropolitan Water Board; Dr. W. H. Bullough, M.O.H. for Essex; Dr. W. H. Hill, M.O.H. South Oxfordshire Combined Districts; Mr. R. Ross, Public Analyst, Burnley; Mr. F. W. Davies, Waterworks Engineer, Nottingham; with Dr. S. W. Wheaton, Medical Officer, Mr. E. A. Sandford-Fawcett, Chief Engineer, and Mr. R. J. Simpson, a principal of the Ministry.

THE annual general meeting of the Society of Superintendents of Tuberculosis Institutions will be held at 122, Harley Street, on Monday, January 30th, at 4 p.m.

THE annual report of Livingstone College, Leyton, for 1920–21 states that during the year the lectures and clinical work at the college were opened to women students, of whom five attended during the whole or part of the session. The college was founded in honour of Dr. Livingstone in order to provide practical training in medicine, surgery, and tropical hygiene for missionaries who expect to work in fields where qualified medical aid is not available. The value of such partial training, though it is, of course, no substitute for the medical curriculum, is considerable, and at the last Commemoration Day Sir George Makins said that such instruction as the students received would make them capable of doing an amount of good impossible without it. The number of students attending the courses showed a slight increase on the previous year, although the numbers are not yet up to pre-war entries. The financial state of the college shows an increased deficit, and the committee urges those interested in the work to do all in their power to raise the £1,500 to £2,000 needed to balance the accounts.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.

2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.

3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

MENTAL DEFECTIVES.

"D. C. D." describes a case of mental deficiency with vicious tendencies in a boy, aged 15, and asks to be recommended a special school.

*** The case is possibly certifiable under the Mental Deficiency Act, 1913. In this event the course "D. C. D." can be advised to take depends upon the financial position of the parents or guardians.

(1) If not moderately well off the case should be referred to the county authorities. Each county council has a special Mental Deficiency Committee for the administration of the Act, and

application should be made to the clerk to the Mental Deficiency Committee at the county or town hall belonging to the area in which the boy is resident. The necessary steps will then be taken to have the case sent to a home, if it should prove to be mentally deficient.

(2) If the parents are in a position to make the boy a private patient in some certified institution, application should be made for his admission to one or other of the various homes in the country. The institutions which may be suggested are the Royal Albert Institution, Lancaster, or the Royal Earlswood Institution, Redhill, Surrey (Secretary, Mr. H. Howard, 14–16, Ludgate Hill, London, E.C.). The diagnosis of these cases is often very difficult, and possibly it would be well to seek expert opinion and advice.

Miss Evelyn Fox, Secretary of the National Association for the Feeble-Minded, 296, Vauxhall Bridge Road, Westminster, London, S.W., would probably be helpful and be in a position to give all particulars as to various institutions.

Income Tax.

"R.A.M.C." writes: (1) Can I claim an assessment on the three years' average if two of them were spent as a captain R.A.M.C. and the third as an assistant? (2) I received a bonus as assistant on April 10th, 1921, for the previous fourteen months; in which year does this fall?

*** It is assumed that "R.A.M.C." is still an assistant. (1) Yes—not as a legal right, but on the strength of the concession semi-publicly announced by the Board of Inland Revenue; (2) the bonus should be regarded as spread over the period for which it was paid; the accident or incident that the actual payment was postponed is not material.

"Ikona" (to whom a reply was given on December 10th, 1921, p. 1015) writes to explain that though he has pressed for the allowance of expenses, his claim has not been allowed, and the collector is still demanding payment of the full amount of tax charged.

*** As our correspondent has given notice of appeal (presumably within the statutory time limit), the collector has no right to apply for the tax, and certainly no claim to payment unless the appeal has been heard. We advise "Ikona" to write to the inspector pointing this out, and requesting him to arrange for the collector's application to be withdrawn until the appeal is settled; he might further say that he cannot conveniently call on the inspector, and would be glad if the latter will state in writing his objections to the claims made.

LETTERS, NOTES, ETC.

THE Librarian of the British Medical Association wishes to replace a copy of Dr. Batty Shaw's book *Organotherapy*, which has been lost, and cannot be supplied by the publisher as it is out of print. The Librarian is prepared to pay the publishing price, 6s., for a copy of the book.

Flat-feet and Toe Troubles.

DR. CHAS. J. HILL AITKEN (Kilnhurst, near Rotherham) writes: About four months ago a man of 45 asked me to look at his great toes. The right was extremely tender on pressing on the nail, and the left looked as though the ulcer of an ingrowing toe-nail would shortly appear. I had read an article in the *Practitioner* by Dr. Robert Hutchison on flat-feet, and took the trouble to examine the patients' insteps. It seemed to me they were inclined to bulge downwards as he stood. With the idea that when one part of a mechanical device gets out of order the mischief may show in other parts, I suggested that his flat arches were really the cause of his painful toes. He differed from me, and decided to buy bigger boots. He did, but returned to me in a week limping. He then acted on my advice, and bought a pair of instep supports. With these he found he could get about comfortably in any boots, new or old, big or proper fitting. I saw him the other day, and he told me his left toe bothered him not at all, and his right only a little. He was wearing the boots he originally blamed for his trouble—block toes.

Hangnails.

DR. CHAS. J. HILL AITKEN, M.D. (Kilnhurst, nr. Rotherham) writes: I have looked in two well-known books on skin diseases, and find no reference to hangnails. The following facts were told me by a layman who used to be much bothered by these unsightly and potentially dangerous lesions. Various popular preventives had proved useless, and my profession had availed him nothing. A nervous person, he discovered he would unconsciously fiddle with his nails and so start a hangnail. He broke himself of this habit and had no hangnails. He then had a series, and discovered he was wounding himself when using wooden matches to light his cigarette. The sharp edge of the cover was the agent. He eliminated this cause by using care in opening the box. He then had another series, and usually in the right hand. He discovered the cause to be a suit of hard cloth which he was wearing. The breast pocket was small, and his spectacle case was a tight fit. He was wounding his fingers when he thrust the case into the pocket. By acting on the result of his own observations he freed himself from hangnails, which had been the bane of his life for years.

Herpes and Varicella.

DR. LEONARD ABRAHAMSON (Dublin) writes: In view of the recent discussions on the relationship between varicella and herpes zoster, I deem it of value to publish the following experience: Some time ago I was called upon to treat a boy suffering from chicken-pox. After he had recovered his little sister fell ill with the same complaint. A week after the girl had got well, two members of the household—the mother and a maid—developed attacks of typical herpes zoster.

Motor Cars: Spare Parts.

DR. J. WILFRED GEORGESON (Lawder, Berwickshire) writes: The dynamo of my Standard two-seater became faulty after five months' use. I wrote to the company and asked if they would give me a dynamo on loan while mine was being repaired. They sent a new one by return. I fitted it and returned the old one. They now have written that the defective dynamo has been repaired, but since the new one I got is absolutely perfect and gives me complete satisfaction, they wish me to keep it, and they make no charge in the matter whatever. Such exceptionally kind and generous treatment of "Standard" owners deserves mention in a paper whose readers are so dependent on cars. Let me further add the car is very good indeed in every respect. I have no interest in the company in any way except that of a satisfied and grateful user.

Motor Insurance.

"F. D. B." (London, S.W.) writes: I should like to draw the attention of fellow members with cars to the advantage gained by insuring through the Medical Insurance Agency (c.o. the British Medical Association, 429, Strand, London, W.C.). I paid £16 17s. on Lloyd's H.P. Policy, and out of curiosity filled in a paper for a quotation from the Medical Insurance Agency, which was £15 3s. 4d. for identically the same thing. As the benefits accruing from this source are all devoted to medical charities, whose resources are so strained at present, members by taking advantage of this Agency would be benefiting not only themselves but the less fortunate members of the profession.

Woollen Winding Sheets.

DR. C. M. DAVIDSON (Ruskington, Sleaford, Lincoln) writes: This is a copy of an affidavit sworn April 8th, 1733, at our local church:

> "Mary T—— made oath that the body of Widow Rogers was not wrapt up or wound up in anything but which was made of sheep's wool according to an Act of Parliament in that case provided.
>
> (Signed) A. S.,
> Curate."

On turning up the deaths I find that from April 8th to May 9th there were seven deaths out of a total of ten for that year, two being in the same house on one day. Evidently an epidemic. In 1729 (four years previously) there was evidently a similar epidemic in April and May, there being seventeen deaths at this time out of a total of twenty-four for the year, several being in the same house. It would be interesting to find out the Act mentioned and the reasons for this particular method of burial being used.

*** Among the expedients resorted to for stimulating the demand for woollen goods in Stuart times was an Act passed in the reign of Charles II, decreeing that all dead bodies should be buried in woollen shrouds. This remained on the Statute Book for 120 years.

Vacancies.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 32, 33 and 34 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 30 and 31.

THE following vacant appointments of certifying factory surgeons are announced: Aberdeen (Aberdeen), Long Sutton (Lincoln), Manchester, West Central (Lancs), Reading (Berks).

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.